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TRANSACTIONS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

WITH

AN ABSTRACT OF THE PROCEEDINGS AT BOARD AND GENERAL
MEETINGS, AND THE PREMIUMS OFFERED BY
THE SOCIETY IN 1926

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TRANSACTIONS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

BRAXY.[1]

By Professor S. H. GAIGER, F.R.C.V.S., University of Liverpool.

The purpose of this article is to give a review, in popular language, of our present knowledge of Braxy in sheep, dealing more particularly with what recent research work and field experimentation have shown to be possible in the way of prevention.

The ultimate aim of all research work into diseases of animals is to devise means of prevention or cure which will be practicable under field conditions. Whether one aims at prevention or cure depends upon several circumstances. One must take into consideration the species of animal one is dealing with. In the case of braxy this is mainly with Blackface and Cheviot sheep, in which the cure of individuals in any numbers is hardly an economic proposition. One must consider the nature of the disease. In braxy we have a disease in which death so rapidly ensues after the onset of illness that affected sheep are rarely seen alive, and there is no time to put curative measures into operation, and further, there is small likelihood of curative measures being effective in a dying animal of the temperament of the sheep. One has to consider what percentage of the whole of the stock is attacked, and whether the percentage of loss is sufficient to justify preventive measures being applied to all. In braxy the percentage of deaths in the hoggs is said to be anything up to seven to the score, or 35 per cent, which would seem to justify any measures. Again, one has to consider the field conditions under which measures of prevention or cure can be put into operation. Hoggs which get braxy are, for the most part, scattered far and wide over hill country, rendering the cure of individuals impracticable for this reason alone. It was obvious, therefore, from the commencement of the writer's investigation, that the aim must be prevention.

---

[1] The research work upon which this article is based was carried out first under the auspices of the Glasgow Veterinary College, and later, the Animal Diseases Research Association.

FORMER INVESTIGATIONS INTO BRAXY.

When the writer commenced the present investigations in 1917, he found that much had been written already about this disease. Hamilton, in his voluminous report of 1906, had pointed out the peculiar distribution of braxy along the Western sea-board of England, Scotland, Ireland, and Wales, and that the "bradsot" of the Western shores of Scandinavia and the whole of Iceland was probably the same disease. In regard to the actual cause of braxy, however, a review of published investigations showed the most remarkable disagreement. The earliest careful observations were made by Hogg, better known as the "Ettrick Shepherd," over one hundred years ago, and, while one could not expect him in those days to determine on anything in the nature of a bacterium as the precise causal agent, one cannot read his writings without being struck by the exactness of his records. In 1888 Nielsen in Norway described as the cause of bradsot a bacillus which he found in sheep which had died of the disease, and eight years later his view was supported by Jensen of Copenhagen, from the examination of material sent to him from Iceland and the Faroe Islands. Again, two years after this, Jensen and his co-workers found the same bacillus in sheep which died of bradsot in Mecklenburg, Germany; this was in 1898. In 1909, Miessner, who had worked in Jensen's laboratory in Denmark, published the results of his own investigations of bradsot in Germany, and gave it out as his conclusion that the bacillus of Nielsen and Jensen was not the causal bacillus, but simply a bacillus of putrefaction which might be found in any dead sheep left to putrefy before examination; and he further concluded that the cause of bradsot must be regarded as not yet (1909) determined. Miessner received support for these views from Titze and Weichel (1910), who had also studied bradsot in Jensen's laboratory in Copenhagen, and returned to work at it in Germany.

Meantime, the study of braxy was being pursued in Britain. The Highland and Agricultural Society of Scotland formed a

Committee of Inquiry in 1881, and Williams in 1884, in the 'Transactions' of the Society, gave his conclusions that braxy was not anthrax, and further, that braxy was not contagious from affected to healthy. Hamilton, who did many years' work for the same Society, published some of his results in 1902. A Committee of Inquiry was appointed by the Board of Agriculture and Fisheries in 1901, and in 1906, Hamilton, as chairman of that inquiry, published his voluminous report, in which he concluded that braxy and bradsot were the same disease, with Nielsen and Jensen's bacillus as the cause, but that under the popular name braxy, no less than four distinct diseases were included. These he termed true braxy, disease A, disease B, and malignant œdema.

Nine years later M'Gowan, in these 'Transactions' (1915), published the results of his investigations into braxy. He concluded that Nielsen, Jensen, and Hamilton were wrong in regarding their bacillus as the causal organism, and that this was rightly to be regarded in the way Miessner and Titze and Weichel regarded it—namely, as a bacterium concerned in the putrefaction of dead sheep, and not the cause of disease in the living sheep. M'Gowan gave out a new theory—namely, that braxy was the same as hæmorrhagic septicæmia, since he had isolated the hæmorrhagic septicæmia bacillus from sheep dead of braxy. Gilruth, in Australia, agreed with Nielsen, Jensen, and Hamilton, and concluded as a result of his work that braxy existed in Tasmania and Victoria.

Conflicting views of this nature left the agriculturist and laymen puzzled. It was not to be wondered at, therefore, that the general conclusion was that the question of the causation of braxy was still unsettled, and that in these circumstances little was to be expected from preventive measures based upon the conflicting views. At the same time, the laymen should not be surprised that there were conflicting results. The period covered by these investigations—namely, 1888 to 1915, was the period of the rise and development of the science of pathology and bacteriology. This development was rendered possible by improved microscopic and other scientific methods for the study of disease. The anthrax bacillus had been first seen about forty years prior to the period mentioned, but it was not till 1882 that the bacillus of tuberculosis and that of glanders were discovered, and in 1883 the bacillus of diphtheria was described. About this time the epoch-making work of Koch and Pasteur laid the foundations of the new science of bacteriology, and since then a new and wonderful structure has been built upon these foundations, embracing diseases of man, animals, and plants the world over.

In spite then of all that had been done in the study of braxy, the disease continued. The extent of the losses amongst sheep in their first winter of life was very considerable, and in the worst affected areas, hoggs still could not be kept at home during the braxy season, which covered the period of October to March. The death-rate at home was so heavy that it paid to send the hoggs long distances by road, rail, and steamer, and bear the cost of wintering them on non-braxy land, even with the added risk of losing 10 or 15 per cent of them from "trembling," upon their return home in spring.

The rise in the costs of transit and wintering during the war years gave rise to a desire amongst agriculturists that further scientific investigation should be instituted, an added reason being, that every effort should be made to conserve animal life as the source of part of the country's food supplies in the stringent conditions brought about by the war.

It was natural that a move with this object in view should come from the West of Scotland, since the bulk of the loss from braxy is in the western counties. It was felt there, that something more permanent should be instituted than the fleeting investigations of the past, when no permanent centre for the scientific research work had been established. Accordingly, the move came in 1917 from the Glasgow Veterinary College, which, with the help of a grant from Government, established a laboratory and equipment for the study of animal diseases, but primarily for the investigation of braxy. By the time of the braxy season of 1918, the laboratory and equipment were sufficiently ready for the preliminaries of this work.

The writer decided from the outset that, in this investigation into a disease about whose nature such contradictory results had been published, the only safe course to follow would be to start from the beginning as though nothing were known, and to get one's own results. At the same time a very useful purpose would be served by studying carefully the research technique of former workers, and trying to find wherein there might be some flaw. It was found from these publications that Nielsen in 1888 fully realised the importance of getting braxy cases as fresh as possible, in order to lessen the likelihood of being led astray by putrefactive bacteria invading the carcase, and being mistaken for the true cause. Jensen at first worked with material from sheep which had died of the disease; and it was from this material that he grew the bacillus from which he made his sero-vaccine for the inoculation of thousands of sheep in Iceland. Subsequent to the criticisms of Miessner and others, he had material collected and sent to him from killed bradsot cases in Iceland. Hamilton dealt with ten cases bacteriologically. All ten cases were found dead and the tissues were green from putrefaction, so much so, that the internal organs were in a state of disintegration, and all manner of bacteria were found in the fluids and tissues of the body. Hamilton was highly skilled in the technique of the laboratory; indeed in some of his work he seemed to be in advance of his time, and why he ever brought his skill to bear on putrid carcases in his braxy investigation must for ever remain a mystery. M'Gowan severely criticised Hamilton for doing this, and rightly so, and apparently set himself the task of getting a fresh carcase. He obtained one " as soon as it died," and reached the conclusion that braxy was hæmorrhagic septicæmia, a disease never before described as occurring in Britain, and which has not been seen since, but is well known as a disease of cattle in Italy, India, and other countries. Nine years later, M'Gowan gave further details of this case. He found it alive and it died as it was being lifted on to the post-mortem table. The post-mortem symptoms in this case, as described by M'Gowan, were not those of braxy, and the bacteriological findings were quite unlike those well-known in hæmorrhagic septicæmia. Moreover, the outbreak from which he obtained this case occurred " in the latter part of August and the whole of September," which is not the braxy season. M'Gowan further states that he has found this same organism in eight cases of braxy, but does not state whether these cases were fresh, or had been dead some time. The organism he describes is a bipolar organism, which simply means a bacillus which stains deeply at each end with aniline dyes. This is one of the characters of the bacillus of hæmorrhagic septicæmia in cattle, but it is also a character of many other bacilli, including post-mortem putrefactive invaders of carcases, and it is a character of bacilli which are normally to be found in the lungs of healthy animals, and can be grown from these organs after death. M'Gowan, in his later article (1921) upon braxy in hares, points out " the necessity of examining even a presumably putrefied carcase if nothing better can be obtained."

The writer was driven to the conclusion that, however difficult it might be to obtain live cases of braxy for investigation purposes (and at first the writer was assured by most agriculturists it would be next to impossible), no other course could remain open to him but to carry out this investigation only upon cases of braxy obtained alive. These would be killed after observations had been made upon them to ensure correctness of diagnosis, and conclusions would only be based upon a detailed study of such cases. Further, the writer concluded that a number of such cases must be studied in order to see whether any results which might be obtained were uniform and constant.

There are various ways of conducting an investigation into a disease. One way is to suspect from the commencement that the cause is bacterial, and to proceed without further ado to try and isolate a bacterium from cases during life or after killing, or immediately after natural death from the disease. By so doing, however, one lays oneself open to the danger of hitting upon some bacterium which may be only present as a concomitant to the disease, and not be the actual exciting cause.

Another, and a safer way, is not to make up one's mind that the disease is bacterial in nature until one has determined what are the precise naked-eye lesions which characterise it, then, having settled upon these, to examine the altered and damaged tissues by the microscope, and see if the cellular and other changes are such that the lesions can be justifiably regarded as having been produced by bacteria. If they can be so regarded, one then proceeds with confidence to try and isolate the causal bacterium. If one succeeds in doing this, one repeats one's methods over a number of cases to see if results are constant, and then proceeds to show whether one can reproduce the disease in healthy animals with the bacterium isolated. The writer invariably selects the latter method in investigating an unknown disease, as being infinitely more likely to lead to sound conclusions, and such was the method adopted with braxy.

From the beginning, almost unlimited help was offered by the flockmasters. A number of them undertook to look out for live cases of braxy, and deal with them according to the detailed instructions issued from the laboratory. The sick animal was carefully watched till near the point of death, in order to be sure it was suffering from a serious illness certain to prove fatal. It was then bled by cutting its throat. The question of confusion, by the flockmaster or shepherd, of braxy cases with other diseases, hardly arose, since sick hoggs were only sought for upon land notorious for a heavy death-rate from braxy, during the braxy season, and under weather conditions well-known as predisposing to braxy, and only those obviously dying from an acute and sudden abdominal affection were dealt with. Instructions were given as to how to make a post-mortem examination, recognise inflammatory lesions, and how to collect material. Tubes of formalin were sent out by the laboratory for the collection of pieces of liver, spleen, kidneys, lungs, heart, and portions of the stomach and bowels. These were sent by the flockmasters to the laboratory for examination.

During the 1918 braxy season, material was received from four cases found alive, and dealt with in the manner above described. The symptoms seen during life in a braxy hogg were found to be as follows: the sick hogg is seen standing or lying away from the rest of the flock, in an obvious state of uneasiness, sometimes lying down and then rising again, neither eating nor chewing the cud. This can be seen from a long way off through field-glasses. When the hogg is approached it may make no attempt to join its fellows, but if in the first stages of illness it may get up and move after the flock, though it soon lags behind, lies down, and can be approached and handled. The abdomen is distended with gases, the face has a dejected appearance, and there is evidence of considerable abdominal pain. The temperature as taken in the rectum is anything up to 108° F. Such a sheep, when watched, is seen to get rapidly worse, the pain increases, the restlessness is accentuated, the abdomen becomes more and more tense, and in a few hours the animal becomes comatose and dies. So rapidly does death ensue, that the majority of shepherds say they very rarely see a braxy hogg alive.

Of the four cases found in 1918, the first was observed for 3¾ hours and then killed, the second was observed for 1½ hours, the third for 3½ hours, and the fourth was observed for 23 hours before it died and was at once bled. The microscopic examination of the material from these cases was noteworthy and suggestive, and stimulated a desire for more of such material in the following season. What was found was that a bacillus was invading the lining of the digestive canal in enormous numbers, and that the natural defences of the body were being brought into play to resist the invasion. The bacilli were being attacked by enormous numbers of leucocytes which had migrated from the blood vessels for the purpose, these leucocytes being cells of a variety whose special function it is to devour and destroy bacterial invaders. The blood vessels in the invaded tissue were enormously dilated, this meaning that an increased supply of blood was being sent, carrying more and still more defensive leucocytes, and pouring out the clear liquid of the blood stream known as plasma, in order to try and wash away the harmful poisons of the invading bacilli. In the battle, the bacilli were obviously gaining ground. Part of the tissue attacked was seen to be dead, and in other parts the walls of the tiny blood-vessels had been destroyed, resulting in hæmorrhages into the tissues at these places. In other parts again, the bacilli had overcome the leucocytes and driven them back, leaving the field clear for the bacilli to increase in numbers enormously. All these phenomena are well known to pathologists as those of inflammation. Nature does not waste effort, and if the system was making such a determined effort to overcome these bacilli, it must be concluded that the bacilli were of a decidedly harmful variety, and that it was vital they be got rid of. Probably then, from this reasoning, these bacilli might be the cause of the disease.

Further than this, in one case a sample of the fluid which surrounds the bowels was sent in, smeared on a glass slide, and in it the same bacilli were seen. Obviously then, these bacilli could penetrate beyond the wall of the stomach, and get into the system, as was further confirmed by finding them in sections of one of the lymphatic glands from the abdomen. The liver and kidneys from these cases showed changes in their cells such as one knows from experience are brought about by the presence in the system of the poisons (or toxins) of bacteria. If, then, the above-mentioned bacilli were the cause of braxy, they not only themselves invaded the sheep's system, but acted upon it harmfully by giving out a deleterious poison. Further material was forthcoming in the same manner from sixteen killed cases in the 1919 braxy season. In all, during the two seasons, twenty cases had been found and observed alive; eighteen of these were killed for post-mortem examination, one was watched till death and then opened for examination, and one died and was opened an hour later. This was quite a sufficient number to base several conclusions upon. In seventeen of the twenty cases there was found and collected for laboratory examination a distinct inflammatory lesion in the fourth stomach, in one of the remaining cases the lesion was in the second stomach, in another case the lesion was seen in the fourth stomach but not collected, and in the remaining case it was apparently missed by inadvertence.

The stomach lesion is therefore to be regarded as a constant feature of braxy. In every case the inflamed stomach wall was microscopically examined, and the appearances such as have been already described were seen—a warfare between invading bacilli and the body tissues. It was evident also from the careful examination of all the material that the invading bacillus belonged to a single species. It was possible, from a study of this bacillus in preserved tissues, to get quite a lot of information concerning it, and the writer was able to look forward to the time when he would be able to obtain it in pure culture in test-tubes in the laboratory.

In some of the twenty cases, portions of the small bowel had been simultaneously attacked by the bacilli. In all the cases the minute microscopic changes were found in the liver and kidneys and sometimes in the heart wall, such as have already been mentioned and ascribed to the effect of the toxins of the bacillus.

Braxy, at this stage in the investigation, could be regarded as probably a bacterial disease, with a definite stomach lesion as the point of origin of the bacterial attack, the bacteria, in some cases at least, themselves penetrating into the system, but certainly in all cases affecting the system by their toxins (poisons).

These early conclusions agreed remarkably closely with Jensen's results, published in 1916, upon the examination of material from ten killed cases of bradsot from Iceland, and it seemed as though braxy and bradsot would eventually be definitely shown to be the same disease.

The next step was to try and obtain the bacillus, which had been seen in pure culture in artificial media in the laboratory, and this was successfully accomplished in the 1920 braxy season.

Through the kindness and enthusiasm of Mr T. M. Macdonald, Barguillean, Taynuilt, Argyllshire, facilities were obtained for establishing a field laboratory in a braxy district. Too much praise cannot be given to Mr Macdonald for his whole-hearted co-operation. His outbuildings made excellent laboratories, his house was open to the writer to live in, his flocks were placed at the writer's disposal even to the extent of placing hoggs upon the very worst land he had on his farm in order to provide braxy cases, and his personal assistance was at all times available. A complete field outfit was taken to this centre, and the further search for braxy live cases commenced in October 1920.

Ten such cases were obtained and dealt with by the most careful technique which it was possible to devise, in order that results might be placed beyond question. Eight of the ten cases were killed for examination, and two died while under observation, and were dealt with immediately. In all the cases the same stomach lesion was found, and in all these lesions the bacteriological findings were identical. The bacillus, which had already been seen in the tissues of the first twenty cases, was seen again in the same circumstances in these ten cases, and from all the latter it was grown in special nutritive media in test-tubes. It was, moreover, established that the bacillus, which commences its attack upon the mucous lining of the fourth stomach, may penetrate every organ in the body, and travel to all the remote parts of the animal's system in the blood stream. It was also found that this bacillus is present in the braxy sheep's system in pure culture—that is to say, as a single species unmixed with other bacteria, and this fact gave it a much greater significance as being, more than likely, the precise causal agent.

Following upon this isolation of the bacillus a minute laboratory study of it was commenced. It was grown upon all known artificial media, tested by various chemical methods, and inoculated into many sheep and other species of animals. By these means it was found that the bacillus from all the ten cases was precisely the same. It was found to be of the class of bacteria which can only thrive in the absence of oxygen, the so-called anærobic bacteria. It was found to be rapidly fatal to sheep and other species of animals upon inoculation. The bacillus was next compared with other known disease-producing anærobic bacteria, and it was found to be identical with that called the *Vibrion septique*, a bacillus well known as a common inhabitant, in varying numbers, of soils, and present in the digestive tract of all animals and man.

It was now possible to construct the story of how infection of hoggs with braxy takes place. When certain disease-producing germs gain entrance through the mouth to the stomach and bowels, they may either render the animal immune or they may infect and set up symptoms of illness. Sheep as a rule only get braxy during their first winter of life. If they live through their first winter upon their own land they are immune for life. If they are wintered away from their own land the first winter, they may show a heavy death-rate at home in their second winter. Immunity comes to them in the first winter through their digestive tract by swallowing the braxy bacilli, unless actual infection and death result. The latter is only brought about by the actual penetration of the lining membrane of the stomach by the bacillus.

What is it which determines infection by the bacillus? Probably anything which lowers the tone of the stomach wall is sufficient to allow the bacillus to penetrate. Climatic conditions are of great importance in predisposing to infection, and flockmasters know quite well the precise weather conditions which will produce cases of braxy. If there is a heavy white frost on, say, Monday morning, hoggs will be found dead on Tuesday morning. If they are closely observed late on Monday evening the illness will perhaps be seen to be commencing. Some may survive the night and be found in the last stages of illness on Tuesday morning. It is always the fattest hoggs which become affected, hoggs which may be presumed to be greedy feeders. Such a hogg fills its first stomach with the frosted grass. The first stomach is not like the fourth stomach, and has not got, like it, a sensitive digestive lining, but the fourth stomach lies alongside the first stomach, and the frosted food lying in the latter chills the former, thereby lowering its healthy tone and allowing the bacilli to penetrate and cause infection. It has now been shown that braxy can be prevented where it is practicable to keep sheep in at night, or at least fold them off the pastures, and give them a small quantity of hay or corn to activate the functions of the stomach prior to letting them on to the frosted pastures in the morning. There are other circumstances which operate in lowering the vitality of the stomach, as, for example, the sudden transference from poor to succulent pasture or on to turnips, which will very often produce a few cases, but one does not see the numbers of cases in these circumstances that one sees where frosted grass operates. It is a curious fact that a long spell of frost does not mean a continuance of cases. In a few *days the stomach, failing* infection, seems to become used to receiving frosted food. It is the sudden change to frost or back to thaw, which produces most deaths. In the cases killed by the writer, the position of the inflammatory lesion in the fourth stomach has always been upon that side of it which lies in contact with the first stomach, a fact which points, as above described, to the way in which the frosted food acts.

The study of the braxy bacillus revealed many interesting things concerning it. It is a bacillus very closely allied to the bacillus well known as causing blackquarter in cattle, but by certain laboratory methods easily distinguishable. So close is the resemblance between the two germs that for some years the *Vibrion septique* (now known to be the same as the braxy bacillus) and the blackquarter bacillus were wrongly believed by eminent scientists to be one and the same. The *Vibrion septique* is best known in human medicine as one of the principal germs present in gas-gangrene war wounds. It got carried deep into such wounds by pieces of soil-contaminated clothing carried in by various projectiles. In such wounds it was, of course, mixed with many other species of bacteria, whereas in sheep it is found acting by itself, or, as is said in technical language, it is a "pure infection." In the treatment of war wounds, much time was necessarily occupied in the study of the bacteria of war wounds, and one of the greatest difficulties encountered was the separation of the various soil germs in the wounds, in order to study them each in "pure culture," and produce protective sera from them for curative treatment. So much time did this occupy, that the war was over before the serum was ready for use upon any appreciable scale. It is safe to say that there would have been a different story to tell had braxy and other animal diseases been systematically studied prior to the war, because these soil germs would have been known, and would have been available in pure culture. It is the simplest of truths to say that the study of animal pathology is indissolubly linked up with the study of human pathology. At first sight many would be found to doubt the suggestion that a study of braxy in sheep could have a bearing upon deaths amongst soldiers in war, but from what has been said above, the writer thinks nothing could be more clearly established than that it would have had a marked bearing. Braxy in sheep has now been shown definitely to be a gas "gangrene" of the sheep's stomach, but caused by the action of only a single one of the bacterial species found in gas-gangrene war wounds. Not only was the resemblance of the braxy bacillus to the blackquarter bacillus a feature of tests in the laboratory, but the curious fact came to light that the braxy bacillus, when inoculated under the skin of experimental sheep, produces a condition indistinguishable by the naked eye from blackquarter in sheep and cattle, and recent work has shown that blackquarter in sheep, and blackquarter in cattle are, speaking generally, caused by two different germs, the former by the braxy bacillus (*Vibrion septique*) and the latter by the true blackquarter bacillus (*Bacillus chauvœi*). Whether in sheep or cattle, there was apparently *one* disease, but science has revealed two different bacterial causes. The position as it now stands revealed by the most recent research is this:—

Blackquarter in Sheep in practically every instance is caused by the braxy bacillus (*Vibrion septique*), but, in one or two recorded cases the world over, it has been found to be caused by the true blackquarter bacillus (*Bacillus chauvœi*). These exceptions are so few that for practical purposes they can be ignored. For practical purposes this must be borne in mind. Braxy in sheep and so-called blackquarter in sheep are caused by the same bacillus, and it follows that immunisation methods directed against the one will be effective against the other.

Blackquarter in Cattle in the majority of cases is caused by the true blackquarter bacillus (*Bacillus chauvœi*), but in a not negligible proportion of cases is caused by the braxy bacillus (*Vibrion septique*). Immunisation methods against blackquarter in cattle should be directed against both these organisms.

When the braxy bacillus is inoculated into the veins of experimental sheep, the sheep die either from a braxy-like illness or from a blackquarter-like illness. In nature, whether the bacillus causes braxy or blackquarter in sheep depends entirely upon its point of entrance into the body.

The writer's investigations have now established beyond doubt, firstly, that braxy and bradsot of Norway, Iceland, &c., are identical diseases, and secondly, that the bacillus which causes them both is identical in every respect with Pasteur's *Vibrion septique*—that is to say that there is no bacterium peculiar to these two diseases, which are really caused by a common soil bacillus (the *Vibrion septique*), enabled by certain climatic and other circumstances to penetrate the lining of the stomach, get into the system, and set up disease. In the absence of these circumstances the bacilli remain in the contents of the stomach and pass harmlessly on through the digestive canal. It is a constant inhabitant of the digestive tract of all animals. The writer now feels tolerably certain that there exists, under the popular name "braxy," only one disease—namely, that of which the precise causation has been here described.

It seems to the writer highly probable that the *Vibrion* *septique* will be found to be the cause of braxy-like diseases in parts of the world other than those mentioned by Hamilton in his report. Since the publication, in 1922, of the scientific account of the writer's investigations, communications on this subject have been received from various parts. In September 1923, cultures of bacteria were received from Colorado, U.S.A., obtained from heavy outbreaks of disease in sheep believed to be braxy. The writer examined these cultures and compared them by the necessary tests with his braxy cultures, finding them identical.

The writer believes that so-called "black disease" of sheep in Australia will in due course be found to be identical with braxy, but up to now insufficient work has been done upon "black disease" for accurate comparison. The authorities in Australia are inclined to believe the disease there to be braxy, and cultures of the braxy bacillus have been sent to laboratories there for study and comparison. The Western Australian Government has just asked for enough braxy vaccine to be sent from Scotland to vaccinate one or two thousand sheep as a test. If, in time, identity is proved, the vaccine can be made in Australia in the same way as is now being done in Colorado, U.S.A., and in Northern Ireland and the Irish Free State. Braxy has also been reported to the writer from Sweden by Dr Magnusson, who recognised the condition in an isolated instance in 1922 for the first time in that country.

THE PREVENTION OF BRAXY.

Although it has been shown in this investigation that braxy is a bacterial disease, no suggestion has been made or implied that the disease is communicable from infected to healthy animals. All sheep, whether infected or healthy, and in braxy and non-braxy districts, have the bacillus known as the *Vibrion septique* in the contents of the stomach and bowels. Such contents are really outside the system of tissues, although inside the body in the sense of being in the digestive tube which runs from mouth to anus. It is only when the *Vibrion septique* penetrates the system by gaining entrance to the lining membrane of the stomach that it can exert any harmful result. So long as the stomach wall, and its internal lining membrane especially, remain healthy, the *Vibrion septique* in the stomach contents is powerless to cause braxy. Unless the adverse circumstances, the climatic changes, &c., above referred to, operate by lowering the vitality of the stomach, no braxy results.

Obviously then, braxy can be prevented in several ways, namely :—

1. Precautions may be taken to avoid subjecting the sheep to the adverse circumstances. This is what

the farmer does when he winters his hoggs away in other districts, to avoid braxy.

2. Steps may be taken to prevent the hoggs taking in frosted food on an empty stomach. Some farmers now find it practicable to pen the hoggs in a corner of the field at night with some hay available for them to eat before they are released on to the pastures on the morning after frosty nights.
3. Some form of immunisation may be resorted to which enables the tissues to resist successfully the penetration of the *Vibrion septique* into the stomach wall.

It has long been the custom to winter hoggs away from home to avoid braxy. The germ is present in all soils, though it is probably present in greater numbers in the soil of very foul pastures. It is quite useless to look to any method of preventing braxy by destroying the causal germ in the soil. The braxy germ has the property of forming itself into a spore, which is a very highly resistant form of bacterial life, unaffected by drying or practicable forms of disinfection. Even if it were possible to kill the braxy spores in the soil, all other forms of life would be destroyed at the same time, and the land would become inert so far as the production of vegetation goes. Wintering away from home has its serious disadvantages. The cost of transporting hoggs every year for long distances by road, rail, and steamer, is very heavy. The wintering costs have to be paid for—namely, five months or so away from home. The losses from braxy may be thereby saved, but the braxy home pastures are also very frequently "trembling" pastures in spring-time. It has been found that "trembling" is always worst upon the return home in spring of hoggs wintered away from trembling land, and that losses may be perhaps 15 per cent at this time. Such a loss from "trembling" in spring is rare in hoggs wintered at home. By being taken away from home they seem not to have acquired an immunity to "trembling" at a year old, which they would have acquired had they remained at home. The farmer has to weigh up the pros and cons of all this, and consider under which system his losses are the least, and act accordingly. If some form of successful immunisation of each individual hogg can be devised, one should be able to save at least three-quarters of the deaths from braxy, and, if there is sufficient grazing to keep the hoggs upon their own land through the winter, the costs of transportation and winter keep would be entirely saved, and further, by wintering at home upon "trembling" land, the losses from "trembling" in the spring would be largely saved.

On hill farms it is not practicable to gather the hoggs in at night and give them a feed of hay or corn before they eat the frosted pastures.

With these considerations in his mind, the writer has been working for the past few years with the object of finding some form of artificial immunisation which would be sufficiently successful to warrant its coming into general use.

The farming community has, in the so-called "Pig-dung treatment," devised a preventative of its own without the aid of science. The method is admittedly crude, but its efficacy in certain districts cannot be denied. The dung of a pig fed upon grass from braxy land and on cabbage is collected, mixed in certain proportions with cows' milk, and the mixture is fed to hoggs. The method is in almost general use in the South of Scotland and is successful, but in the Western counties of Scotland it has been tried and has been a failure. The opponents of the method say the hoggs are so much reduced by the treatment that they die from poverty in the spring. This is undoubtedly true, but it is also true to say that given a sufficiently good grazing the method has been found eminently successful. Pig-dung treated hoggs which get braxy often take the disease in a milder fashion.

There is no doubt whatever in the writer's mind that this method acts by conferring an immunity to the treated hoggs. Numbers of bacteria, including the *Vibrion septique*, are introduced in the dung mixture into the sheep's stomach, and there they grow and multiply in the milk in which they are introduced, producing toxins (poisons) which immunise by their action upon the sheep's system after absorption. Laboratory examination has shown the presence of the *Vibrion septique* in the pig-dung mixture.

Given a less crude and repulsive but equally effective measure, the advocates of the pig-dung method would gladly abandon it. As yet little has been done in the field to immunise by the mouth with a laboratory product, since a method of inoculation, presently to be described, has been concentrated upon. Any laboratory product for artificial immunisation against braxy must fulfil certain conditions :—

It must be safe to use.—There is always a risk in using any vaccine, since the underlying motive is to stimulate the sheep's system to produce antibodies (antidotes) for its own protection. So what the scientist does is to make his vaccine as safe as possible, and calculated not to cause more loss by its use than a fraction of 1 per cent of the sheep inoculated, and yet at the same time cause sufficient "reaction" in the sheep to produce antibodies in sufficient amount to protect against a natural attack.

It must be as safe for use in the hands of the flockmaster or shepherd as the scientist can make it.—A vaccine for braxy has to be used in practically all parts of the braxy areas simultaneously—that is to say, during the last two weeks of September. The greater part of these areas consists of wild hill country without ready communications by railway. For these reasons no veterinary practitioners or even a large staff of inoculators could get round in the time available to do the inoculations. The inoculations, or whatever immunisation method is practised, must be done by the flockmaster or shepherd. Further than this it is doubtful whether the saving effected by any sheep-immunisation method would not be so reduced by having to seek professional help, that the method would be rendered scarcely worth while.

A vaccine for use by flockmasters or shepherds must be of such a nature that the technique is reduced to a minimum. A vaccine which settles in the syringe, or which requires to be dissolved at the farm before use, brings in an element of danger which might have serious results. One cannot, of course, avoid the risk which there will always be of the laymen not paying heed to instructions, but experience has shown that this risk is small, since all connected with sheep seem particularly well-endowed with intelligence and common-sense.

It must have a certain efficiency.—No vaccine can be expected to be 100 per cent efficient. If the death-rate from braxy in a flock is only 1 or 2 per cent, it is obviously not worth the farmer's while to inoculate the whole flock on the chance of effecting this saving. If the death-rate is 20 per cent from braxy, and immunisation reduces this to one-half or one-quarter, the method is obviously worth while. It is for the farmer to decide for himself what percentage of loss in his flock justifies him in treating the whole flock by any immunisation method. Claims which are made for any immunisation method, that it reduces the death-rate to nil or to a fraction of 1 per cent, are open to considerable doubt.

Speaking generally, hoggs are liable to braxy, whereas gimmers are immune if wintered at home as hoggs. There is evidently a natural process of immunisation taking place, and it behoves us to see what it is. At birth, a healthy animal has no bacteria in its stomach or intestines, but with the first act of swallowing, during or after birth, bacteria are taken in, since bacteria are everywhere and on everything exposed to the air. Nature provides a measure of protection for the young animal against these bacteria, which otherwise would soon kill the new-born. This provision is that the colostrum or first milk has a measure of anti-bacterial properties, and keeps down excessive bacterial growth till the young animal's system can protect itself. It does this by producing in some measure antidotes in the system to the poisonous products of these bacteria if they are absorbed,

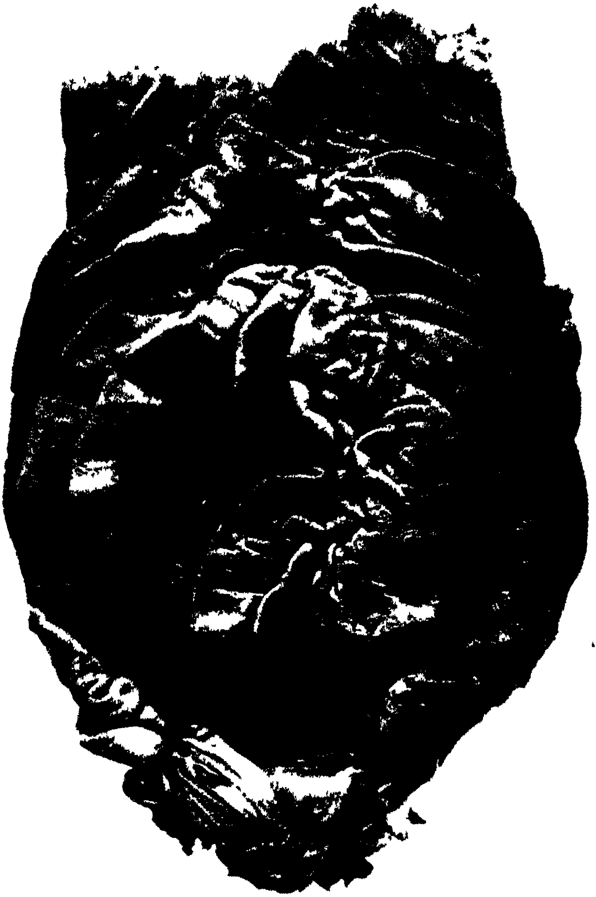

Fig. 1

FOURTH STOMACH OF A BRAXY SHEEP.

The fourth stomach of a braxy sheep killed whilst dying from braxy. The stomach has been cut open lengthwise. The inflamed fold of mucous membrane is seen in the centre of the picture, showing much darker than the healthy folds. It shows blackish-red when the stomach is opened This is the point where the braxy bacillus has penetrated the mucous membrane and is entering the system in enormous numbers.

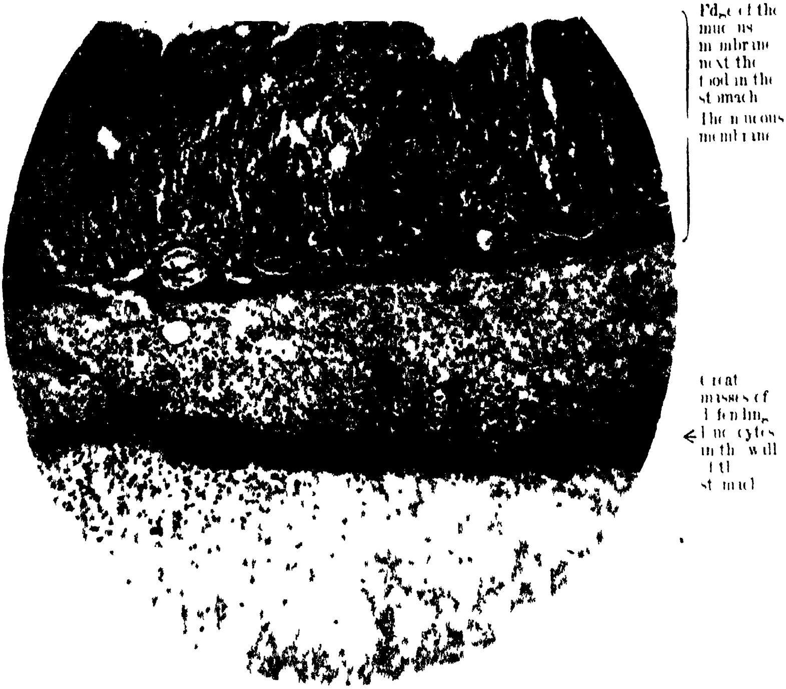
Edge of the mucous membrane next the food in the stomach
The mucous membrane
Great masses of defending leucocytes in the wall of the stomach

FIG. 2

BRAXY STOMACH. MICROSCOPIC APPEARANCES.

Here is shown magnified a section through the wall of the stomach of a killed braxy sheep at the place where the braxy bacilli have penetrated. This magnification is not sufficiently great to show the bacilli themselves but shows their effect upon the living tissues. The top edge of the section is that next the food in the stomach, and the bacilli are penetrating from above downwards. Great numbers of defending leucocytes the black dots in the picture have ranged themselves in a dense wall like an entrenched army in an endeavour to stop the invading bacilli. The left edge of the mucous membrane at the top of the picture is seen to be lighter in colour. This means that it has died as a result of the attack of the braxy bacilli.

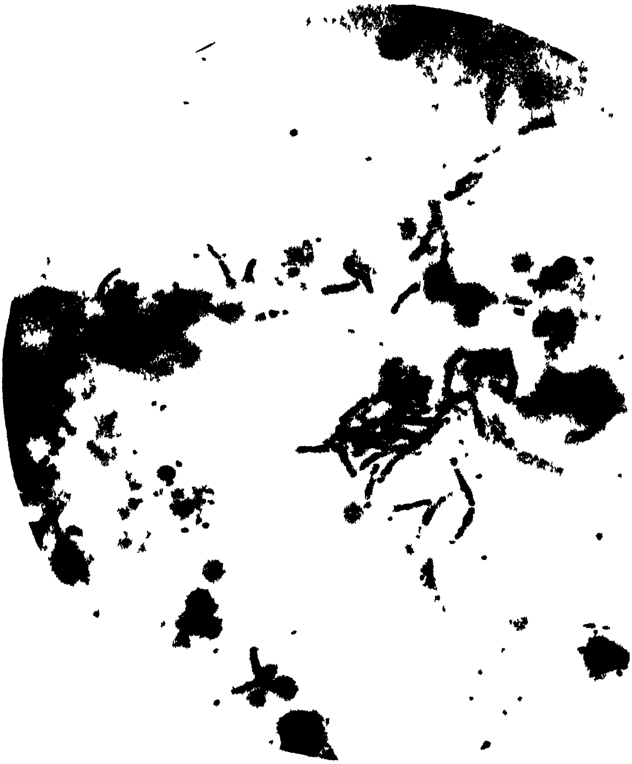

FIG. 3

BRAXY BACILLI IN THE STOMACH LESION.

This microphotograph is taken at a very high magnification of a minute portion of the tissues shown in Fig. 2. Here are seen a number of rod shaped braxy bacilli engaged in warfare with the leucocytes represented as the larger deep black masses in the picture. In braxy this battle is almost always won by the bacilli, and the death of the sheep is the result. Some of the bacilli show clear spaces in them. These are the spores of the bacilli.

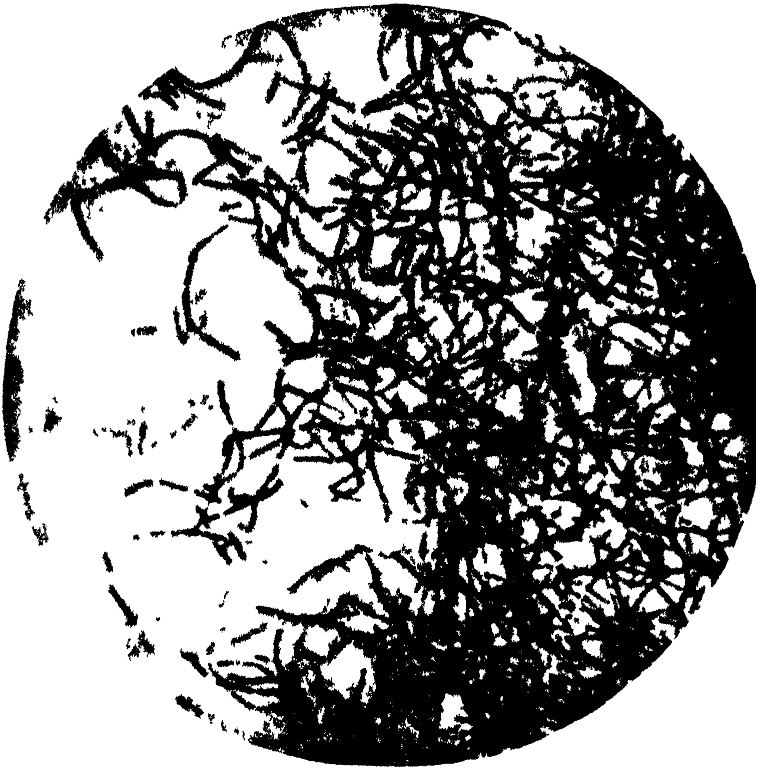

FIG 4

MASSES OF BRAXY BACILLI IN THE STOMACH LESION

This microphotograph is taken at a very high magnification It is taken at a different part of Fig 2 from that at which Fig 3 was taken In this photograph enormous numbers of rod shaped braxy bacilli are seen and here the battle with the leucocytes has been won by the bacilli the former having disappeared leaving the bacilli alone in the field to grow and multiply, and further invade and conquer the sheep's system and by giving to the lining membrane of the stomach and bowels the power to resist the invasion or penetration of the bacteria themselves.

On braxy land, sheep have been dying of braxy for generations, and there must be a fairly high *Vibrion septique* content in the soil and on the pastures. The *Vibrion septique* is amongst the first bacteria to gain entrance to the digestive canal of the lamb. If in winter conditions it does not infect, it immunises, and it does this by the toxins of the bacillus being absorbed into the sheep's system, and stimulating the production of antibodies (antidotes) against the toxin in self-defence. This being nature's method of conferring immunity, one cannot do better than copy it if possible.

It is fortunate that one has the analogy of blackquarter as a guide in considering braxy immunisation. A very great deal has been done in field immunisation against blackquarter, and it became necessary to consider how far known methods for that disease may be applicable for braxy, using the braxy bacillus in place of the blackquarter bacillus. Nielsen in Norway, in the early days, recognised the analogy between the two diseases, and used dried muscle and dried kidney substance from braxy sheep which had died to inoculate healthy sheep. His method gave variable results, and caused numerous deaths in Iceland, and was abandoned as impracticable. Jensen in Denmark made use of several methods: (1) he injected under the skin of healthy sheep the dried and heated spores of the braxy bacillus; (2) he passed through the skin a thread impregnated with the spores of the braxy bacillus and looped the ends to keep it in position; (3) he used threads in like manner which were impregnated with dried spores plus a dried anti-serum, the latter being to minimise the danger to the inoculated animal from the spores; (4) he used a dried and powdered anti-serum mixed with dried and powdered spores, the mixed powder being dissolved in boiled water just prior to use. Jensen experimented with these methods for five or six years and finally adopted his last method, called a sero-vaccine method. Since 1912, he has been sending about 200,000 doses annually from Copenhagen to Iceland. In 1921, his colleague, Christiansen, published, in a Danish journal, a full account of the technique of this method.

Through the kindness of Professor Jensen the writer was enabled to try this sero-vaccine in Scotland. In 1920-21, it was used upon 575 hoggs, amongst which there was a death-rate of 5 per cent from braxy, whereas amongst control (uninoculated) sheep there was a death-rate of 17.5 per cent. In 1921-22, this sero-vaccine was used upon 738 hoggs with 3.2 per cent of deaths from braxy, whereas in the controls the death-rate was 10 per cent.

There could be no question about the protection which Jensen's sero-vaccine conferred, but it was found that several hoggs were lost as a direct result of the inoculation when this was left to the shepherds. The dry powder does not dissolve satisfactorily, and is apt to settle in the syringe and lead to some hoggs getting a much larger dose than others. The percentage of loss in this way was small, but losses are never evenly distributed. One flock will have a high percentage, and perhaps the next ten flocks no losses at all. It had to be borne in mind that these proposed attempts at the prevention of animal disease by the inoculation of many thousands annually were something quite new in Scotland, and whatever faith one might have in eventually devising a satisfactory and practicable method one must not risk spoiling everything by inoculation losses at the outset. Rumours are very apt to become exaggerated, and are hard to kill.

On account of these considerations the writer decided that only the safest method of immunising had better be tried out first, even if it took several years to do so, and for that reason selected the method of immunisation by means of the toxin (poison) of the braxy bacillus. The toxin would act as any other vaccine does. Experiments at prevention of blackquarter in cattle by the toxin of the blackquarter bacillus had been favourably reported upon in recent years from other countries, and with this analogy one felt justified in proceeding to large field experiments.

Some confusion is to be found amongst laymen as to the difference between a vaccine and a serum.

A vaccine consists of the germ itself, either alive, attenuated, or dead, or of the toxic products of the germ, and the action when inoculated is to produce a "reaction" in the animal's body, and the production of antibodies by the animal's system. The vaccinated animal produces its own immunity. It follows that time must elapse for this production of antibodies to take place, and in consequence, vaccination has to be done about a fortnight before the animal is likely to be exposed to infection. Protection given by vaccines is usually of not less duration than several months. An example in man is the use of dead typhoid bacilli as a vaccine to protect those likely to be exposed to natural infection with typhoid fever. The "reaction" here is the slight malaise after the first and second injections.

A serum, or better, "anti-serum," is the blood-serum of horses which have been rendered very highly immune to the germ in question by repeated injections of gradually increasing doses, extended over a period of several months. In course of time these horses are so very highly immune (hyperimmune) that a small quantity of their blood-serum, say 10 cc., suffices to protect other animals against the disease which this particular germ causes. Such serum-producing horses are bled at the height of their immunity, and the serum collected for inoculation into a large number of animals. The inoculated animals get their antibodies ready-made. No "reaction" is provoked by serum inoculation, so that no more antibodies are in the inoculated animals than are put into them in the serum inoculated. Since the serum is ready-made the protection given to animals inoculated with it is immediate, but since no "reaction" is provoked, no excess of antibodies accumulates, and the protection given is only fleeting; ten days at most. Anti-serum used alone is inoculated in some diseases as a curative. An example in man is the injection of anti-diphtheria serum to persons already affected with diphtheria. The ready-made antibodies neutralise the toxin of the diphtheria bacillus absorbed into the system from the throat where the bacillus grows. It can be used in combination with vaccine very successfully to lessen the danger from the "reaction" which a vaccine provokes, the serum giving immediate protection while the vaccine acts by stimulating antibody production, and so prolonging the immunity.

Once the best technique for the production of the toxin of the braxy bacillus had been found, its production in considerable quantities did not present insuperable difficulties. It is inexpensive to make, and provided every care is taken in its manufacture, the finished product is germ-free and without danger in reasonable dose. The technique is briefly as follows: the bacillus is grown in artificial culture in a liquid medium, specially suitable for its nourishment, till the culture is swarming with bacilli, and the liquid has quantities of the toxic products of growth in solution. The bacilli are then filtered out through unglazed porcelain filter candles, and the filtrate, with a small percentage of carbolic acid added to preserve it, constitutes the vaccine.

The dose of the vaccine has to be carefully regulated. If the dose is too small the response on the part of the system is feeble, and insufficient antibodies are manufactured to give a good immunity. If the dose is too strong, the sheep's system is enfeebled and not in a position to produce antibodies as it should. The dose must produce a proper "reaction" on the part of the system. With this vaccine an effort is made to so regulate its strength that for the first dose 5 cc. can be given to strong hoggs, and 3 cc. to small hoggs. The first dose gives the animal a certain immunity which enables it to withstand a larger dose in a fortnight's time. The maximum for the second dose is 10 cc., but in most cases about 7 or 8 cc. is all the hoggs can stand. For both inoculations farmers are advised to try a few hoggs first before doing large numbers, in order to test the susceptibility of the flock to the vaccine. The tests of the vaccine before its issue from the laboratory are done upon sheep as well as guinea-pigs. The correct "reaction" in the inoculated hoggs is a slight stiffness with slight redness and tenderness where the inoculation was given. The sheep should not go off their food, and should be quite well again in forty-eight hours after inoculation. Special detailed instructions are issued with the vaccine describing the technique. Long tours by road were made by the writer in order to demonstrate the method in all parts of Scotland and the North of England.

Field trials of the toxin method were commenced in 1921, when 3535 hoggs were inoculated, and uninoculated hoggs were left upon the farms in not less than equal numbers, but the inoculated hoggs were often placed upon much more diseased land than the uninoculated hoggs. In eight instances the inoculated and uninoculated were kept in equal or comparable numbers under practically identical conditions; in other words they were truly "controls" to the experiments. When the worst of the braxy season was over (31st January 1922), the losses in these eight instances from natural infection were 4.04 per cent, as against 10.28 per cent in the controls.

In the autumn of 1922 over 12,000 hoggs were inoculated, and in them the death-rate was one-quarter what it was in the uninoculated. The figures are interesting because they are those of the last year in which there have been sufficient deaths from braxy in the controls to enable one to draw reliable conclusions. The vaccine was used upon 110 different farms, in every braxy county in Scotland, and upon a few farms in the North of England, and Northern Ireland. Accurate returns were received for over eleven thousand inoculated hoggs, but for many of these, controls were not kept upon the same land, the dose given was less than recommended, or only a single dose was given. The death-rate in 4840 hoggs done according to instructions on fifty-three different farms, was 2.28 per cent, whereas amongst 3813 control hoggs to these, there was a mortality of 9.07 per cent. The reduction in mortality was therefore 6.79 per cent. On five other farms the vaccine did not reduce mortality, the deaths in 383 hoggs being 3.9 per cent, and in 475 control hoggs 3.7 per cent. Among 5500 inoculated hoggs for which no controls were kept the mortality was 2.5 per cent.

In the autumn of 1923 close on forty thousand hoggs were inoculated, and fairly accurate returns to March 1924 were received for 24,000 of these, in which the death-rate was 4.5 per cent as compared with 6.5 per cent in the controls. A death-rate of 6.5 per cent in uninoculated sheep shows how extremely light a year it was for braxy, since 20 per cent is said to be a not infrequent figure in the braxy areas in bad years.

In the autumn of 1924 approximately the same number of hoggs were inoculated, and figures were received to March 1925 for 22,500 of these, in which there was a death-rate of 3.4 per cent as compared with 5.31 per cent in the 6000 controls.

Figures for the autumn inoculations of 1925 will not be available till the spring of 1926. When these are available, the toxin method of immunisation will have been in use for five years. Each year has seen improvements in the technique for preparation of the vaccine, though it must be pointed out that the work has been done under the worst possible laboratory surroundings for such work. Suitable surroundings for work of this kind are a *sine qua non* for success. This serious drawback will be remedied by the removal of the work in the spring of 1926 to premises designed for the purpose. Such are the advantages of using toxin as a vaccine that it would seem to be advisable to continue this method for one or two more seasons under the improved conditions which will be afforded by the new premises before finally reckoning up results. It had been the writer's intention to carry out simultaneous field trials with other methods of vaccination to avoid loss of time if the toxin method failed, but this has simply been impossible under present conditions and would have proved positively dangerous, since it is not permissible to carry on bacteriological technique in one room where all the staff are constantly moving about, and where the atmosphere is laden with bacteria from packing materials. These methods have had to be postponed till the occupation of the new premises, where there will be special rooms for the various processes.

The judging of results of any method of vaccination against braxy presents almost insuperable difficulties. The incidence of the disease is such that control hoggs are not really controls to one's experiments unless these hoggs are left uninoculated upon the same land under identical conditions and in approximately equal numbers. The flockmaster shows an unwillingness to do this, which can be readily understood. He has displayed a flattering conviction that inoculation is going to save his hoggs. There can be no question from the methods adopted in these investigations that the causation of braxy has been correctly settled for all time, and this has now been accepted by scientists in this and other countries, but the writer has never lost an opportunity of pointing out that the question of successful prevention is a matter for experimentation under field conditions upon a considerable scale over a number of years, although he believes, given perseverance and patience, a successful method will be evolved eventually.

The writer's ideal would be to leave true controls, as defined above, for all inoculated hoggs. The farmer's view is that inoculated hoggs are safe, and can be put upon his worst braxy land, whereas any he leaves uninoculated must be put upon his safest land, and in most cases he cannot see why he should leave any hoggs uninoculated at all.

If one were to modify the definition of control hoggs as given above, one would run a risk of getting very unreliable statistics. One cannot, for example, compare the death-rate from braxy on a farm where *all* the hoggs have been inoculated in one year with the death-rate when no hoggs were inoculated the previous year, nor even take an average death-rate for several years previously, for comparison. The vagaries of this disease are comparable only with the vagaries of the climate, as will be understood from references made to the influence of climatic conditions. They are not dependent on the content of braxy bacilli of the soil, as would be the case, say, with anthrax. The death-rate from braxy may vary very considerably upon different parts of the same farm in any one year, necessitating the controls being left upon the same hirsel.

The inoculation method of prevention has its advocates and opponents. The scientist is, of course, only out to learn the truth, and the difficulty of getting truthful control hoggs has been described. Perhaps a good way to judge the efficacy of the method is to see whether the same flockmasters go on using it year after year, and this is certainly the case. Opponents say inoculation causes a serious loss in the hoggs' condition, but such reports are often found to be due to a flockmaster or shepherd who is prejudiced against the method, or has a desire to blame something for his sheep not having thriven on poor land in a bad season. Where inoculated and uninoculated sheep have been kept under identical conditions and weighed, no differences in the weight increases have been observed. Inoculation does not mean protecting the animals against one disease by giving them another, as one bright opponent put it! If this were true it would have to be maintained that every individual in our armies, when given the anti-typhoid inoculation to save him from death from typhoid fever, was given a "disease." The "disease" was a temporary malaise which may have meant being in bed for a day. Similarly in sheep the "disease" means their being temporarily off-colour for a day, though usually without loss of appetite.

A note of warning against commercial imitators is necessary in the interests of sheep owners. One particularly dangerous example of copying the method introduced has been brought to the writer's notice. In this instance a vaccine is being issued which is said to be effective for both blackquarter and braxy because of its being a mixed vaccine consisting of the toxin of both the *Vibrion septique* and the *Bacillus chauvœi.* This would be advisable for cattle, in which, as was pointed out, both bacilli produce blackquarter, but for sheep it can only be 50 per cent useful because both blackquarter and braxy in sheep are caused by the *Vibrion septique,* except in a negligible number of cases. It follows that half of this mixed vaccine is not only serving no useful purpose, but can only be harmful since it is producing a reaction in the sheep to no purpose, at a time when everything possible should be done to conserve the sheep's condition.

One is naturally awaiting a bad braxy year to see what the vaccine, now being issued, can do. The seasons of 1923 and 1924, with their death-rate in control hoggs of only 6.5 per cent and 5.3 per cent respectively, must be looked upon as very light braxy years. It is too soon as yet to know whether the season commencing in 1925 will turn out to be a bad one.

Nothing but field trial can determine which preventative should be used. On the ground of expense of preparation, there is not much difference between the toxin method and Jensen's sero-vaccine method. In the latter method the amount of dried serum which has to be added to the spores to make them a safe vaccine is so very small that the serum of one hyperimmunised horse is sufficient to provide the serum quota of the sero-vaccine for one and a half million sheep. The toxin method involves much labour in packing and despatch. Jensen's sero-vaccine involves a good deal of handling in drying the serum and spores, and could only be made under the best conditions for bacteriological technique.

The losses from braxy are such that efforts should not be slackened until an effective preventative is brought into general use.

SMALL HOLDINGS.

By ARTHUR G. RUSTON, B.A., B.Sc. (Lond.), D.Sc. (Leeds), Lecturer in Agricultural Economics, The University of Leeds.

In reading the Interim and Final Reports of the Agricultural Tribunal of Investigation, it is interesting to note that, widely as the views of the members of that Tribunal differed on many points, each member advocated, and advocated strongly, the extension of the small-holding system in England.

"We have given close attention to the experience of this country in the provision of small holdings during the last fifteen years, and to the remarkable developments which have taken place in Germany and Denmark, and we wish to record our opinion that the small-holding movement is of the greatest value in maintaining the agricultural population, and that the time has come for a renewed and vigorous effort to extend the establishment of small holdings on the land."

While every student of agricultural economics will be in perfect agreement with the first portion of the above finding of the Tribunal, there are many who undoubtedly will accept the latter portion only with reserve.

The work of Dr Laur in Switzerland and of Dr Larsen in Denmark is, in this respect, exceedingly interesting and instructive, and the statistical data collected by them from the carefully kept accounts of a large number of holdings of varying size have brought out the weak and strong points of the small-holding system in a remarkable manner. It is only after carefully studying trustworthy data of this description, and weighing up the "pros and cons," that one can finally decide how far we in England should be justified in following the example of the Danes and Swiss, and adopting a policy which involves the breaking up of the large estates.

If such a policy is adopted, and the tendency certainly points that way, what size of holding is likely to give the best results for the nation as a whole, the community at large, and the individual farmer concerned? Questions of this kind, vital to the interests of the agricultural community, can only be answered after a careful study of the accumulated data collected from the trustworthy records of carefully kept farm accounts.

GROSS OUTPUT.

If a time comes when we must, as far as possible, be self-supporting, so far as our food supply is concerned, it is undoubtedly the small holding which is wanted. The figures of Dr Larsen answer that point quite conclusively, for the gross output per acre, corresponding to the amount of food produced for sale from the small holding under 25 acres, is nearly double that of the larger farms.

TABLE I.

Average Danish Results, 1917-1923. Variation of Gross Output with Size of Farm.

Size of Farm.	Gross Output in pounds per acre £	s.	d.
Under 25 acres	20	1	0
From 25 to 50 acres	15	4	0
From 50 to 75 acres	15	3	0
From 75 to 100 acres	13	18	0
From 100 to 250 acres	12	8	0
Over 250 acres	12	4	0

When it is realised that in 1924 the net outlay on the purchase of imported food material amounted in this country to £572,869,308, and the net balance between the exports and imports of all industrial products, whether raw material or manufactured goods, was only £134,481,153 in favour of the exports, it will be seen that a time is coming, even if it has not already come, when as a nation we shall have to face boldly the problem of our national food supply.

The Swiss results of Dr Laur again show that the gross output per acre steadily decreases as the size of the holding increases.

Swiss Results.

Size of Holding.	Gross Output in pounds per acre. £	s.	d.
7½ to 12½ acres	22	11	7
12½ to 25 acres	19	0	3
25 to 37 acres	17	17	2
37 to 75 acres	16	2	0
Over 75 acres	13	17	7

Our own results, from a study of the accounts of a limited number of small holdings in Yorkshire, go to show that the gross output on small holdings of every type is invariably high on the acreage basis, but not necessarily so per man employed.

YORKSHIRE RESULTS, 1923-24.

Farm.	Acreage.	Gross Output. Per acre.			Gross Output. Per man employed.		
		£	s.	d.	£	s.	d.
E. K. F.	5	83	16	4	419	1	2
P. C. M.	14	19	2	1	133	14	7
D. S. C.	15	29	5	10	439	8	8
H. W. C.	16	35	10	6	319	1	6
F. M. A.	21	10	4	6	214	18	2
R. S. F.	32	22	14	6	443	13	8
I. W. S.	49	12	3	5	338	4	0
L. C. A.	50	10	5	4	171	5	10
Average of 70 farms	255	7	14	6	340	9	9

It is interesting to see that while the Danish results show quite conclusively that the gross output on the acreage basis steadily decreases with the size of the holding, the variations of the output per man employed are certainly in the other direction.

DANISH RESULTS.

Size of Holding	Gross Output per man employed.
	£
Under 25 acres	179
25 to 50 acres	194
50 to 75 acres	216
75 to 100 acres	214
100 to 250 acres	229
Over 250 acres	224

From a national and social point of view it is possibly the gross output on the acreage basis that is of the more importance, but from the economic point of view it is the *output per man* every time.

EMPLOYMENT OF LABOUR.

Is the time coming when we may lose our industrial supremacy, when the industries in the towns can no longer absorb our surplus population from the country; when the question of unemployment may loom large upon the horizon, and the question of the employment of labour be one of the planks upon which a national agricultural policy will be built ?

The figures of Dr Larsen show that it is the small holding which, unit for unit, is socially the best in this respect, the holding of less than 25 acres giving on the average employment to 11.3 men per 100 acres, as compared with 5.4 in the case of the holdings of over 250 acres.

Danish Results.

Variation of Wages Bill and Number of Men Employed, with the Size of the Holding.

Size of Holding.	Wages paid per acre.	No. of men employed per 100 acres.
	£ s. d.	No.
Under 25 acres	8 12 0	11.3
25 to 50 acres	5 15 0	7.8
50 to 75 acres	5 10 0	7.0
75 to 100 acres	5 2 0	6.5
100 to 250 acres	4 2 0	5.4
Over 250 acres	4 2 0	5.4

The Swiss results of Dr Laur, and our own in Yorkshire, both confirm those of Dr Larsen, and show that the small holding certainly has the social advantage of giving employment to a large number of people upon the land, with a possible economic disadvantage of a high labour bill per acre.

Yorkshire Results, 1923-24.

Farm.	Acreage.	No. of men employed per 100 acres.	Labour bill per acre.
			£ s. d.
E. K. F.	5	20.0	18 4 0
P. C. M.	14	14.3	18 17 8
D. S. C.	15	6.7	5 18 2
H. W. C.	16	9.4	10 1 9
F. M. A.	21	4.8	4 15 10
R. S. F.	32	6.3	7 4 0
I. W. S.	49	3.6	4 8 6
L. C. A.	50	6.0	4 14 4
Average of 70 farms .	255	2.3	2 10 0

Capitalisation.

The individual farmer, however, will look at the matter from the personal rather than the impersonal point of view, and the economic rather than the social aspect of the case will appeal to him; and it is here that the figures of Dr Larsen are so instructive, for they reveal the fact that the small holding of approximately 20 acres, so common in Denmark, is not the most economic unit. It is handicapped by high capitalisation, particularly in the form of non-productive capital, by high working costs, by the uneconomic employment of labour, both man and horse, to such an extent as to more than over-balance the social advantages it enjoys.

Danish Results.

Capital Invested Per Acre.

Size of Holding.	Land.			Buildings.			Working Capital.			Total Capital.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Under 25 acres	16	10	0	18	8	0	20	12	0	55	10	0
25 to 50 acres	17	5	0	13	5	0	15	8	0	45	18	0
50 to 75 acres	19	3	0	12	4	0	14	15	0	46	2	0
75 to 100 acres	18	18	0	11	18	0	13	8	0	44	4	0
100 to 250 acres	18	10	0	9	18	0	11	10	0	39	18	0
Over 250 acres	19	8	0	10	2	0	10	7	0	39	17	0

When once the land has been acquired, buildings must be erected and working capital found before that land can be efficiently farmed. A glance at the table above will show that in the case of the small holding under 25 acres the total capital to be invested in the farm is approximately *three and a half times* the value of the land, and, roughly, *twice* the value of the land in the case of the holding of 250 acres.

Unfortunately the big increase in the capitalisation of the smaller farms is largely in the form of buildings, implements, and what may be looked upon to a certain extent as non-productive capital. The following table, compiled from the records of Dr Larsen, shows the average variations in the acreage value of implements and machinery on Danish holdings of varying sizes.

VARIATIONS IN THE IMPLEMENTS AND MACHINERY VALUATION PER ACRE.

Implement	Under 25 acres.			25-50 acres.			50-75 acres.			75-100 acres.			100-250 acres.			Over 250 acres.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
Power . . .	0	9	3	0	8	8	0	7	0	0	7	0	0	6	4	0	8	0
Sowing and planting	0	6	2	0	4	0	0	3	8	0	3	8	0	2	9	0	2	6
Harvesting . .	0	4	0	0	9	10	0	7	8	0	7	0	0	5	10	0	6	2
Threshing . .	0	11	10	0	9	10	0	10	9	0	7	8	0	7	4	0	9	10
Fodder preparing .	0	3	8	0	3	8	0	2	6	0	2	6	0	1	6	0	0	11
Cultivating . .	0	11	10	0	7	4	0	6	2	0	5	10	0	4	0	0	4	3
Carts . . .	1	10	3	0	17	6	0	14	6	0	12	0	0	9	0	0	9	0
Harness . .	0	4	4	0	2	9	0	2	9	0	2	2	0	1	6	0	1	6
Small tools . .	0	2	6	0	1	6	0	1	2	0	0	11	0	0	11	0	1	2
Stable equipment .	0	3	1	0	0	7	0	0	7	0	1	2	0	0	11	0	0	11
Sundry . .	0	7	0	0	1	10	0	1	10	0	1	10	0	1	6	0	1	2
Total . .	4	13	11	3	7	6	2	18	7	2	11	9	2	1	7	2	5	5

The accompanying graph shows at a glance the heavy burden of non-productive capital which the really small holder in Denmark has to carry.

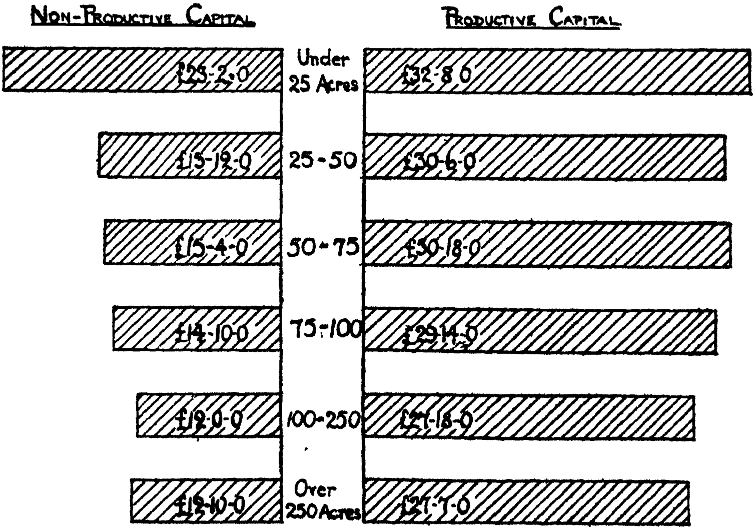

Fig. 5.—*Capital invested per acre in Danish Holdings.*

While the data for this country is to a certain extent scanty, yet such as is available shows that here, as in Denmark and Switzerland, the small holder has to bear the same handicaps of high working capitalisation, particularly in the form of implements and dead stock. The following table giving details of the acreage valuation of the seventy Yorkshire farms whose accounts were last year supervised through the Department of Agriculture of the Leeds University, shows that in this respect also the small holder of this country falls into line with his confrères of Denmark and Switzerland :—

YORKSHIRE RESULTS, 1923-24.

VALUATION PER ACRE.

Size of Holding.	Livestock.			Tenant Right.			Produce.			Imps.			Total.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
50-100 acres	14	0	0	2	6	0	1	18	0	5	5	0	23	9	0
100-150 ,,	8	4	0	2	15	0	2	16	0	3	13	0	17	8	0
150-200 ,,	7	0	0	2	15	0	2	15	0	3	10	0	16	0	0
200-250 ,,	8	1	0	3	9	0	1	2	0	2	3	0	14	15	0
250-300 ,,	6	14	0	2	11	0	2	0	0	2	1	0	13	6	0
300-350 ,,	6	2	0	2	18	0	1	8	0	1	16	0	12	4	0

PRODUCTION COSTS.

From the economic standpoint, it is not so much the gross output that matters as the net; it is not so much the sales off the farm, its production, or productivity that stands out as pre-eminently important, but the *margin* between the production costs and sale prices; and, unfortunately, while the output from the small holding is undoubtedly high, the production cost of that output is also high. The Danish results of Dr Larsen show this; the Swiss results of Dr Laur confirm it, and our more limited data show results which are strictly in agreement.

DANISH RESULTS.

Size of Holding.	Total production costs per acre.		
	£	*s.*	*d.*
Under 25 acres	17	10	0
25 to 50 acres	11	16	0
50 to 75 acres	11	10	0
75 to 100 acres	10	4	0
100 to 250 acres	9	5	0
Over 250 acres	9	4	0

The way in which some of the various production costs have been found by Dr Laur to vary on Swiss holdings of various sizes is illustrated in the following diagram. That these high production costs are common not only to small holdings of Denmark and Switzerland but also to those of this country can be seen from the following records of small holdings in Yorkshire, in which their results are compared with the average result obtained during the same period on the whole of the seventy commercial holdings already referred to :—

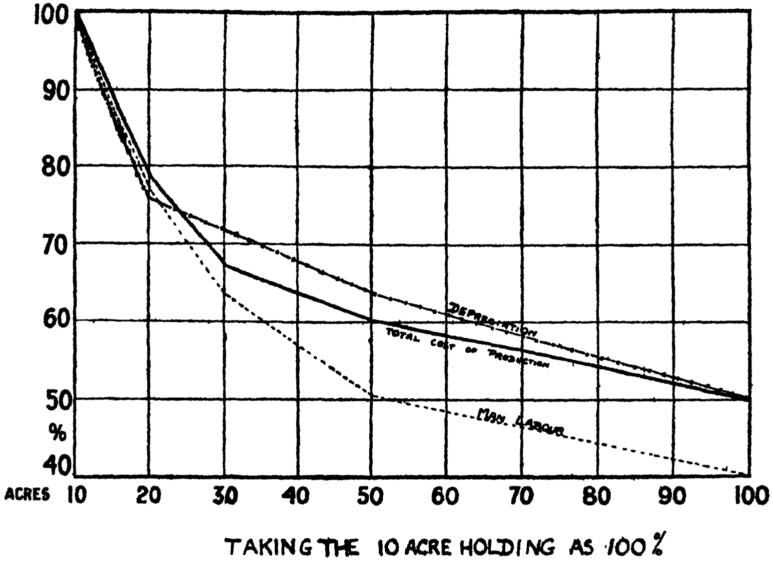

Fig. 6.—*Production costs. Swiss results.*

Expenditure per Acre.

Farm.	Total.			Labour Bill.			Purchased Foodstuffs.			Capital per acre.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
E. K. F. . .	43	9	11	18	4	0	37	4	3	73	6	2
P. C. M. . .	45	8	4	18	17	8	17	10	1	27	9	2
D. S. C. . .	38	4	11	5	18	2	22	1	6	34	15	5
H. W. C. . .	50	16	0	10	1	9	13	15	6	35	18	1
F. M. A. . .	24	15	11	4	15	10	3	18	8	17	8	6
R. S. F. . .	22	14	6	7	4	0	4	15	3	26	2	6
I. W. S. . .	16	4	3	4	8	6	4	7	7	17	2	7
L. C. A. . .	15	17	8	4	14	4	5	8	6	16	17	5
Average of 70 farms	11	9	11	2	10	0	1	9	3	13	4	7

The high rent and rates which are inseparable from small holdings, their high labour and other costs, add heavily to the cost of production of their home-grown foods, even of the grazing, and these high costs of production of crops react upon the cost of upkeep of the stock consuming them ; thus, H. C. W. is a small holding of 16 acres of grassland on the outskirts of one of the industrial towns of Yorkshire, the rent charged corresponds to less than a 2 per cent return on the landlord's capital actually invested in the holding. It is good grass well managed, heavily stocked, and treated on orthodox lines, but killed by high rents and high rates, amounting to no less than £5, 12s. per acre, and constituting 68 per cent of the total cost. Had this holding been double the size, the capital outlay for building and housing accommodation for the stock would have been very much smaller in proportion, the land would have been rented at a lower acreage figure, the cost of grazing and the cost of milk production would have been very considerably reduced.

GRAZING COSTS, 1922-23.

Per acre.	H. W. C. (Small holding 16 acres)	Average of 34 Farms.
	£ s. d.	£ s. d.
Rent	3 10 4	1 8 5
Rates	2 1 11	0 8 1
Manure	0 13 9	0 3 10
Incidentals	1 0 6	0 10 8
Man labour	0 12 4	0 5 5
Horse labour	0 5 6	0 2 11
Total cost . .	8 4 4	2 19 4
Number of acres grazed per cow equivalent	.90 acres	1.46 acres
	£ s. d.	£ s. d.
Cost per cow per year . . .	7 17 2	4 6 0
Cost of grazing per cow per week .	0 5 3	0 3 11

MILK PRODUCTION, 1922-23.

Per cow per year.	H. C. W. (Small holding 16 acres.)	Average of 24 herds.
	£ s. d.	£ s. d.
Grazing	7 17 2	6 0 3
Soiling crops	..	0 18 7
Hay and straw	9 12 11	4 13 9
Roots	3 10 1	4 6 11
Concentrates	18 16 1	12 10 10
Total food	39 16 3	28 10 4
Depreciation	12 5 4	9 11 4
Incidentals	1 5 4	0 15 10
Labour	20 15 11	11 2 11
Gross cost	74 2 10	50 0 5
Less manure	5 2 0	3 3 6
Less calves	..	0 19 6
Net cost of upkeep per cow per year.	69 0 10	45 17 5
Average milk yield per cow	764 gals.	588 gals.
	£ s. d.	£ s. d.
Cost of production of milk per gallon	0 1 10	0 1 6½

NET ECONOMIC RESULTS.

If we look at the following table, it will be seen that after allowing for a normal interest on the capital invested in the holding, and charging the labour of the small holder himself at the normal rate paid to the hired man, there has been in Denmark during the seven years 1917-23, an annual yearly deficit of 4s. per acre on the small holding under 25 acres.

Wage charged—

3s. 6d.	per day	in the year	1917-1918.
4s.	,,	,,	1918-1919.
5s.	,,	,,	1919-1920.
6s.	,,	,,	1921-1922.
4s. 10d.	,,	,,	1922-1923.

The efficiency of the holding increased with its size up to a maximum which was reached on farms of between 75 to 100 acres, on which a surplus of 30s. per acre was obtained, and then fell off steadily as the holding increased, the surplus on farms of over 250 acres being approximately £1 per acre.

Danish Results.

Size of Holding.	Capital invested per acre.	Output per acre.	Cost of upkeep per acre.	Net Balance per acre.	Normal Interest on Capital invested.	Balance per acre after allowing for normal Interest on Capital.
	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
Under 25 ac.	55 10 0	20 1 0	17 10 0	2 11 0	2 15 0	−0 4 0
25-50 acres .	45 18 0	15 4 0	11 16 0	3 8 0	2 5 0	1 3 0
50-75 acres .	46 2 0	15 3 0	11 10 0	3 13 0	2 6 0	1 7 0
75-100 acres	44 4 0	13 18 0	10 4 0	3 14 0	2 4 0	1 10 0
100-250 acres	39 18 0	12 8 0	9 5 0	3 3 0	2 0 0	1 3 0
Over 250 ac.	39 17 0	12 4 0	9 4 0	3 0 0	2 0 0	1 0 0

In Switzerland the holdings are on the average smaller even than in Denmark, and from a study of Dr Laur's results it will be seen that in spite of the high gross output from the holdings under 12½ acres, their high capitalisation and high labour and other production costs were instrumental in reducing the average net profits obtained on them to less than 3 per cent on the capital outlay, as compared with more than 5½ per cent in the case of the holdings of more than 75 acres, from which it would appear that the efficiency of the normal holding increases with its size certainly up to 75 acres. In this respect there is, on broad general lines, an almost uniform agreement between the results obtained by Dr Larsen in Denmark, Dr Laur in Switzerland, and those which we have obtained from a more detailed study of a smaller number of farms in Yorkshire.

[Table: Swiss Results.

SWISS RESULTS.

Size of Holding	No. of Holdings.	Capital invested per acre.			Output per acre.			Production costs per acre.			Net Balance per acre.			Balance expressed as Interest on Capital invested.	Normal Interest per acre on Capital invested.			Balance per acre after allowing for normal Interest on Capital.		
		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.
7½ to 12½ acres .	662	149	18	8	22	11	7	18	15	1	3	16	6	2.5%	6	0	0	–2	3	6
12½ to 25 acres .	2457	116	16	2	19	0	3	14	5	6	4	14	9	4.0%	4	13	6	0	1	3
25 to 37 acres .	1367	108	8	5	17	17	2	12	8	11	5	8	3	4.9%	4	6	9	1	1	6
37 to 75 acres .	1247	96	11	10	16	2	3	11	1	1	5	1	2	5.2%	3	17	3	1	3	11
Over 75 acres .	364	75	4	3	13	17	7	9	11	10	4	5	9	5.6%	3	0	2	1	5	7

In none of these cases is the small holding of 30 acres, so common on the Continent, found to be the most economic unit; while if either Dr Laur's or Dr Larsen's results are plotted, it will be seen that there is a very marked falling-off in the economic efficiency as the holding falls below 35 acres.

Our own limited number of results go to show that so far as size is concerned, the peak of maximum efficiency is apparently in this country reached on a holding of somewhere between 100 and 150 acres, though, as has been pointed out before, the data at present available is not sufficiently large for the evidence to that effect to be conclusive.

Actually there are indications that the efficiency curve of holdings of varying sizes in this country is not a continuous one, but has two peaks, the first one apparently somewhere between 100 *and* 150 *acres*, after which the curve falls, only to rise again to a second crest somewhere about 350 acres, from which point onwards it appears to fall as the holdings increase in size above that limit.

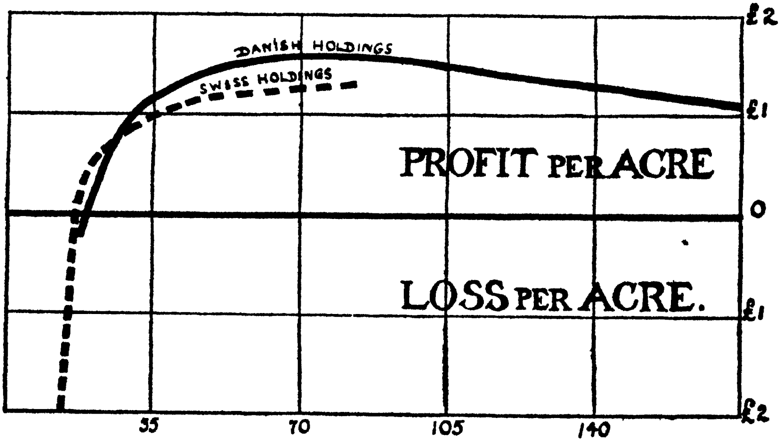

Fig. 7.—*Efficiency curves of Danish and Swiss holdings.*

Place a man on a small holding of under 12½ acres, the records of Dr Laur show that he would be £2, 3s. 6d. an acre, or, roughly 10s. a week better off, were he employed as a hired man on a larger farm, and were the money which he has sunk in his holding invested in Corporation or other trustee stock. It would be difficult to justify such an economic handicap on any social grounds.

Place a man on a small holding of just under 25 acres, the records of Dr Larsen show that he would be 4s. an acre, £5 a year, or, roughly, 4s. a week better off were he to hire himself out on a larger farm, and invest his money again in trustee stock instead of in his holding. There are undoubtedly many men so constituted that they would prefer to work for themselves, as their own masters, and order their own lives in their own way, rather than place themselves at the beck and call of another man, even if by doing so they were sacrificing 4s. a week; and undoubtedly this spirit of independence is a thing to be encouraged and fostered.

Place a man on a holding of from 75-100 acres, he not only maintains his independence, but will also be placed in a position in which he has a maximum chance of financial and economic success. Such a farm could still be run as a *family* farm, and possess the social advantage we all wish to develop, high output and a maximum employment of labour on the land, compatible with economic efficiency. In the interests of the nation extend the small holding movement by all means, but in the interests of the small holder, widen the term so as to make it include a holding of at least 75 acres; and remember that except on very specialised farms there is a very marked falling-off in its economic efficiency as the holding falls below 35 acres.

Number of Small Holdings in Country.

In this respect a study of the following table illustrating the variations in the number of holdings of various sizes during the last forty years is certainly instructive. It will be seen that in this country the tendency has certainly been in the direction of the gradual elimination of the large holdings, and also of those which have been found in practice to be too small for economic working. In spite of the repeated efforts made to encourage the small-holding movement, economic forces have slowly but surely worked in the direction of the medium-sized farm hovering round the 100 acres, which our limited results suggest to be in this country the most efficient economic unit.

TABLE VI.

Number of Holdings in England and Wales.

Size Group.	1885.	1895.	1918.	1921.	1924.
1 to 5 acres .	**114,273**	**97,818**	**92,302**	**81,217**	**76,859**
5 to 20 acres .	**126,674**	**126,814**	**122,117**	**116,159**	**111,934**
20 to 50 acres .	**73,472**	**74,846**	**78,027**	**80,967**	**79,537**
50 to 100 acres .	**54,937**	**56,791**	**59,287**	**61,001**	**60,781**
100 to 300 acres .	**67,024**	**68,277**	**69,431**	**67,842**	**67,411**
Over 300 acres .	**16,608**	**16,021**	**14,513**	**12,947**	**12,861**

The Minority Report of the Agricultural Tribunal of Investigation, signed by Professor MacGregor, makes very interesting references to this point.

"The grounds on which the small-holdings policy can clearly be based are two.

"In the first place, it is the policy for maintaining rural population; it does this by satisfying an ambition, and thereby impeding the rural exodus.

"In the second place, it is in the interests of the efficiency of farming as a whole that qualified labourers should be enabled to start on their own account and to rise into the ranks of farmers. Agriculture, it may be repeated, is an industry to which this latter idea is so specially applicable that an effective small-holdings policy is a matter of social justice."

Going further into detail, he quotes the following figures with reference to the variations in the number and acreage of the small holdings under 50 acres in England and Wales between the years 1875 to 1919:—

NUMBER AND ACREAGE OF SMALL HOLDINGS IN ENGLAND AND WALES.

Year.	Number.	Percentage of all Holdings.	Acreage.	Percentage of area under all Holdings.
1875	333,630	70.7	4,182,346	15.4
1880	336,149	70.7	4,176,427	15.0
1885	314,419	69.2	4,203,742	14.9
1895	299,378	68.9	4,224,594	15.0
1908	287,170	66.8	4,368,330	15.7
1913	292,446	67.0	4,281,526	15.5
1919	272,568	65.5	4,150,813	15.5

"It will," he says, "be seen that the area under small holdings remains a fairly constant proportion of the area under all holdings, and that this is also to a certain extent true of the numbers. The fact which is most difficult to explain is the decline of the acreage since 1908, since it was in the beginning of this year that effective legislation came into force."

Under the Act of 1892 practically nothing was done. The Act of 1907 came into force on the first day of 1908, and from that time until the outbreak of the war, 189,294 small holdings of an average size of 13 acres were established at the rate of just over 2300 holdings per year; yet in spite of this the number of statutory small holdings in the country to-day is

60,000 less than it was in 1875, and nearly 15,000 less than it was in 1908, when compulsory powers for their creation were first acquired. In other words, of recent years *for every two statutory small holdings established three have disappeared, to be merged into larger holdings.* Make the small holding an economic unit, and the small-holding movement will grow; but the compulsory establishment by law of a system which, whatever social advantages it may enjoy, is based on foundations which are economically unsound, is doomed to failure from the commencement; and the utilisation of public funds for the establishment of such a system is as satisfactory a process as pouring water through a sieve.

During the year 1924-25 we have had the accounts of eighty farms under most careful supervision. Of these, fifty-two at the time of writing are already completed, and of those fifty-two the one which stands out easily in the premier position for its economic efficiency is farm W. D. R., a small arable holding of 89 acres, 22 of which only were under grass. It is also interesting to note that this holding, originally two small holdings, both economic failures when worked separately, has been made a huge economic success when worked as one unit.

The farm has a high gross output, high sales, but no abnormally high capitalisation, no abnormally high expenditure, no unreasonably large number of men employed upon it, no unduly heavy labour bills, no heavy outlay on non-productive capital. It is not too heavily overstocked with horses; the labour, both man and horse, can be efficiently supervised, and are economically worked, with the result that good crops are grown, and grown cheaply.

In the report sent to this man on the 6th June 1925 it was stated:—

"Mr —— will note that the year's working of the farm has resulted in a net profit of £791, 3s. 4d., of £8, 18s. 9d. per acre, 4.4 times the rental or of 58 per cent of the working capital invested. Such a result, in spite of the general improvement which has taken place in agricultural conditions during the past year, is a remarkable achievement, and shows what may be accomplished by careful management and attention to detail, given a holding of *economic size* and suitable land. Such a result has only been made possible by careful management and attention to detail—two factors which stamp Mr ——'s farm as one of the best we visit."

W. D. R., 1924-1925.—Gross Output

	Initial Valuation			Purchases.			Sales.			Final Valuation			Gross Output.			Gross Output per 100 acres.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Cattle	220	10	0		..		31	0	0	372	0	0	182	10	0	206	2	0
Pigs	38	0	0		..		125	8	6	39	0	0	126	8	6	142	12	0
Poultry	14	5	0	6	1	3	134	3	7	20	3	0	134	0	4	151	10	0
Milk and milk products		..		0	12	0	242	9	6		..		241	17	6	273	2	0
Wheat	10	0	0		..		120	1	0	28	3	4	138	4	4	156	0	0
Oats		..		6	1	6		..		27	12	10	21	11	4	24	8	0
Peas		..		9	6	9	25	16	0		..		15	19	3	18	1	0
Potatoes	79	10	0	8	0	0	442	11	6	274	0	0	629	1	6	711	5	0
Roots		..			..			..		36	16	10	36	16	10	41	12	0
Total	£362	5	0	£30	1	6	£1121	0	1	£797	16	0	£1526	9	7	£1724	12	0

Gross output per 100 acres	£1724 12 0.
Gross output per man employed	£689 17 0.
Number of men employed per 100 acres	2.5
Per £100 spent on labour	£590 19 6.
Per £100 of capital invested	£202 10 0.
Per £100 of total expenditure	£175 0 0.

YORKSHIRE RESULTS, 1924-25.

	W. D. R. Double Small Holding.			Average of 52 Commercial Farms.		
	£	*s.*	*d.*	£	*s.*	*d.*
Gross output per 100 acres . .	1724	12	0	892	13	9
Gross output per man . . .	689	17	0	331	3	11
Expenditure per acre . . .	11	3	0	13	8	9
Profit per acre	8	18	9	0	15	0
Profit as percentage of capital invested	58%			5%		
	£	*s.*	*d.*	£	*s.*	*d.*
Working capital per acre . .	15	17	3	14	5	4
Wage bill per acre	2	12	9	2	14	1
Number of men employed per 100 acres	2.5			2.7		
Percentage of gross income taken by labour	19%			20%		
	£	*s.*	*d.*	£	*s.*	*d.*
Cost of grazing per acre	3	5	10½	2	17	0
Cost of grazing per cow equivalent .	3	5	10½	4	1	0
Cost of seeds hay per acre . .	5	8	2	6	2	4
Cost of seeds hay per ton . .	3	12	2	3	15	5
Cost of wheat per acre . . .	7	11	9	8	13	4
Cost of wheat per cwt. . . .	0	6	6	0	8	2
Cost of oats per acre . . .	8	1	3	9	2	1
Cost of oats per cwt. . . .	0	6	7	0	9	2
Cost of potatoes per acre . .	20	11	2	25	0	4
Cost of potatoes per ton . . .	3	0	0	3	9	11
Cost of mangolds per acre . .	11	14	3	15	16	7
Cost of mangolds per ton . .	0	15	7	0	16	4
Cost of upkeep per horse per year .	28	15	3	34	15	6
Cost of horse labour per working day	0	4	6	0	4	6
Cost of upkeep per cow per year .	20	14	2	35	0	4
Cost of production per gallon of milk	0	0	11½	0	1	2½
Cost of upkeep per hen per year .	0	7	6	0	8	5
Sales per bird per year . . .	1	5	10	0	13	4
Profit per bird per year . . .	0	18	4	0	3	10

Such a result could only have been obtained as the result of really first-class management and particularly favourable marketing conditions, *but it could not possibly have been obtained on a statutory small holding, however good the management, because these high outputs could not have been obtained at such low production costs.*

COST TO RESPONSIBLE AUTHORITY.

A study of the financial returns of the authorities responsible for the provision of the small holdings is also interesting. In the year ended 31st March 1921 one such authority had under its control 11,968 acres, the rent of which paid by the tenants amounted to £31,772, 18s. 10d., corresponding, roughly, to 53s. per acre, as compared with an average rent paid on normal-sized farms in the same county of 28s. per acre. The cost to the responsible authority amounted to no less than £57,131, 0s. 5d., and involved them in a loss that year of £25,358, 1s. 7d., making the economic rent of the holdings concerned approximately £5 an acre, a burden which no agricultural land under present conditions could hope successfully to carry. The reason for abnormally high rents can be seen from the fact that of the estates acquired under the Land Settlement (Facilities) Act of 1919, 8119 acres were purchased for £340,000, or £43, 15s. per acre; while, in addition, the cost of their additional equipment with the necessary buildings amounted to no less than £252,942, or £32 an acre. The cost of the holdings, land, and buildings to the authorities concerned amounted to no less than £75, 15s. per acre. We have, at the present time, the accounts of eighty commercial farms under investigation in the county. Since 1919, eighteen of these have been bought by the former tenants at an average cost not of £75, 15s. but of £29, 7s. 3d. per acre.

Undoubtedly many inexperienced men have been established upon small holdings at great expense to themselves and to the public, and have never had a dog's chance of success. If *suitable* men, trained in the practical work of the farm, could be placed on holdings *suitable* in size, there need be little fear of them not making good; and if, where necessary, cheap credit could be found, possibly out of the public purse, for carefully selected men deserving it, it would be money well spent.

The establishment of 656 men on just under 12,000 acres by the authority already referred to has resulted in an annual loss of approximately £25,000 of the rate or taxpayers' money; and in spite of the fact that this corresponds to a grant out of the public funds of approximately £1 per week to each of these men, it has been of little practical benefit to them.

Had a careful selection been made, and between 200 and 250 of the most suitable and experienced men been placed on holdings nearly three times as large, not only could the capital expenditure on buildings have been reduced by at least £80,000, and most probably £100,000, but the men so placed should have needed no support out of the public purse, for they would have had a chance, and a good chance, to make their farms a financial success; while in addition at least £80,000, and most probably £100,000, of capital expenditure on the erection of superfluous buildings might have been avoided. Had that money been utilised in productive expenditure like drainage, it would have been put to good purpose.

OUTPUT FROM STOCK AND CROP.

A study of Dr Larsen's figures shows that in Denmark, as in England, the small holder relies almost entirely upon the sales of produce of animal husbandry for his revenue, the output of animal products amounting to, as can be seen below, £15, 10s. per acre in the case of the small holdings under 25 acres, and to only £5, 4s. in the case of the large holdings of more than 250 acres; while the output from the crops, which amounted to only £1, 12s. per acre, or only 10 per cent of the total output in the case of the small holdings, rises to £5, 4s. per acre, or 50 per cent of the total output in the case of the large ones.

DANISH RESULTS, 1921-1922.

OUTPUT OF ANIMAL PRODUCTS.

Size of Holding.	Milk and milk products.			Pigs and pig products.			Eggs and poultry.			Total of animal products.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
Under 25 acres . .	8	4	0	5	8	0	1	18	0	15	10	0
25 to 50 acres . .	6	8	0	3	12	0	1	6	0	11	6	0
50 to 75 acres . .	6	0	0	3	12	0	1	4	0	10	16	0
75 to 100 acres . .	5	12	0	3	4	0	0	12	0	9	8	0
100 to 250 acres .	4	16	0	1	13	0	0	5	0	6	14	0
Over 250 acres . .	4	1	0	1	0	0	0	3	0	5	4	0

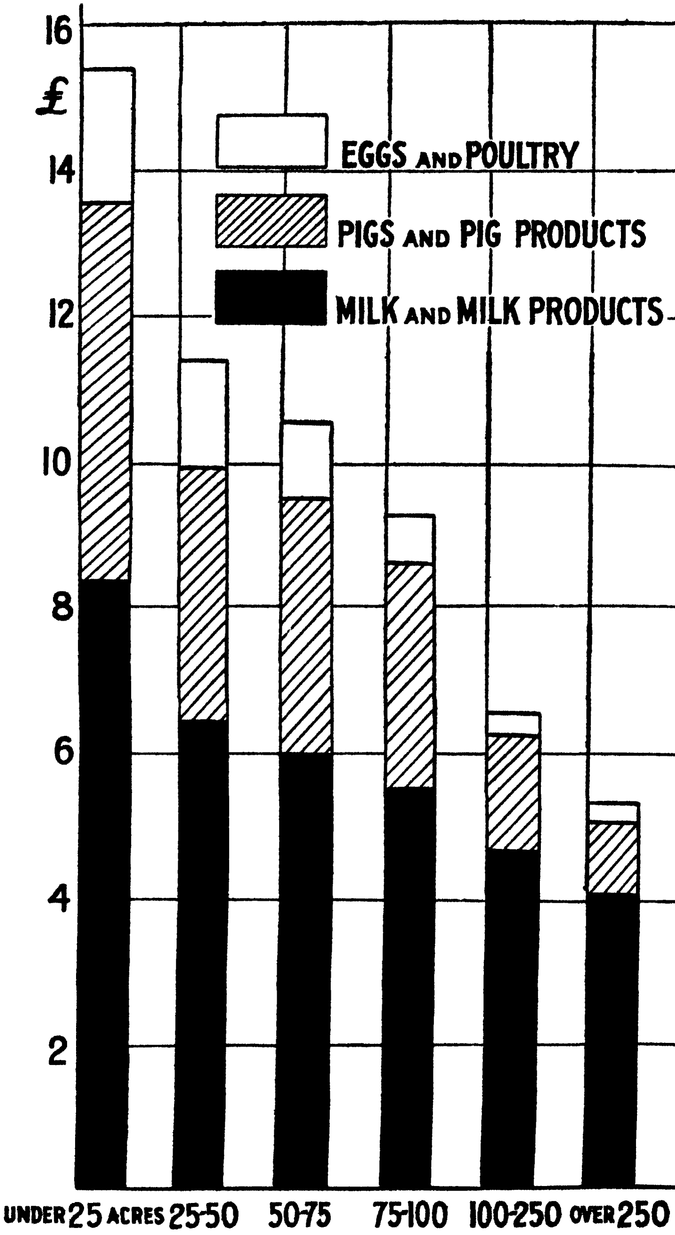

Fig. 8.—*Output per acre of animal products.*

OUTPUT OF CROP PRODUCTS.

	Corn.			Other crops.			Total of crop products.		
	£	s.	d.	£	s.	d.	£	s.	d.
Under 25 acres .	0	9	0	1	3	0	1	12	0
25 to 50 acres .	0	12	0	0	12	0	1	4	0
50 to 75 acres .	0	17	0	1	7	0	2	4	0
75 to 100 acres .	1	0	0	1	6	0	2	6	0
100 to 250 acres .	1	10	0	1	0	0	2	10	0
Over 250 acres .	3	12	0	1	12	0	5	4	0

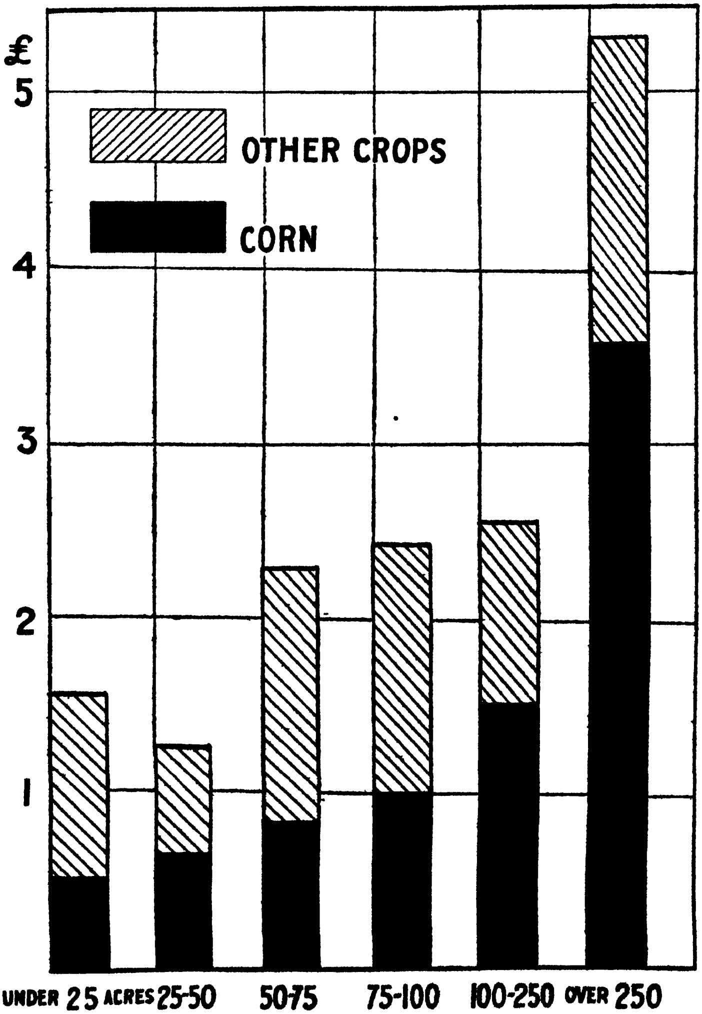

Fig. 9.—*Output per acre of crop products.*

PERCENTAGE OF GROSS OUTPUT.

	Under 25 acres.	25-50 acres.	50-75 acres.	75-100 acres.	100-250 acres.	Over 250 acres.
Animal Products—	%	%	%	%	%	%
(*a*) Milk . .	48	51	46	48	51	40
(*b*) Pigs . .	32	29	28	27	17	9
(*c*) Poultry .	10	10	9	5	3	1
Total . .	90	90	83	80	71	50
Crop Products—						
(*a*) Corn . .	3	5	8	9	16	38
(*b*) Other crops .	7	5	9	11	13	12
Total . .	10	10	17	20	29	50

Evidently the small holder manages his grass land *better*, and his arable land, particularly the area under corn, *worse* than his brother on a large holding, as can be seen from the following records extracted from Dr Larsen's figures :—

	Yield per grain per acre.	Food units of grass and forage crops per acre.
	cwt.	
Under 25 acres	16.2	1080
25 to 50 acres	16.8	965
50 to 75 acres	19.5	978
75 to 100 acres	20.2	840
100 to 250 acres . . .	20.4	836
Over 250 acres	21.0	800

The skill of the small holder in the management of stock, the value of the individual attention which he is able to give to them, points which we have noticed in our own records on the farms being costed through the department in Yorkshire, are brought out by a study of Dr Larsen's figures, as are also the handicaps that the small holder has to suffer in the over-stocking of horses and the uneconomical use made of the horse labour on holdings that are too small.

The following extract, taken from a report sent off on the 12th December 1924 to L. C. A., a small holder farming 48 acres in the Doncaster area, may in this respect be of interest :—

"In many ways the holding at —— is handicapped in the same way as are the small holdings in Switzerland and Denmark. Possibly one of the most striking cases is the way in which it is heavily over-stocked with horses, with the consequence that sufficient work cannot be found for them to keep them really busy on the farm. The following comparison of the efficiency of the horse labour on Mr ——'s farm and on the fifty-two farms already referred to is certainly instructive :—

HORSE LABOUR IN DENMARK.

Size of Holding.	No. of acres per working horse.	No. of working days per horse per year.	Feeding units fed per head per year.	Cost of horse labour. Per working day.			Cost of horse labour. Per acre.			Cost per working horse per year.		
				£	s.	d.	£	s.	d.	£	s.	d.
Under 25 acres	7.2	94	1792	0	5	8	3	13	6	26	12	0
25-50 acres .	17.2	131	2450	0	5	5	2	16	0	35	16	0
50-75 acres .	17.2	143	2676	0	5	6	2	5	3	39	0	0
75-100 acres .	19.2	157	2748	0	5	5	2	4	8	42	8	0
100-250 acres .	23.5	179	2850	0	5	0	1	18	4	45	0	1
Over 250 acres	27.3	212	3204	0	5	0	1	17	10	52	10	0

HORSE LABOUR IN YORKSHIRE, 1923–1924.

COMPARATIVE COSTS.

Size of Holding.	No. of acres per working horse.	No. of working days per horse per year.	Cost of horse labour. Per working day.			Cost of horse labour. Per acre.			Cost per working horse per year.		
			£	s.	d.	£	s.	d.	£	s.	d.
Under 50 acres . .	7.63	88.4	0	7	9	4	6	0	32	12	1
50 and under 75 acres .	18.12	99.4	0	7	3	2	1	7½	37	14	5½
75 " " 100 " .	25.94	135.6	0	4	9½	1	5	1½	32	11	0
100 " " 150 " .	28.04	131.3	0	4	11	1	3	1	22	6	10½
150 " " 200 " .	35.32	128.6	0	4	6	0	16	4½	28	18	1
200 " " 300 " .	34.40	149.0	0	3	11½	0	17	1½	29	8	0
Over 300 acres . .	44.97	170.3	0	4	4	0	16	6½	37	2	9

	L. C. A.	Average of 52 Farms.
Number of working horses kept per 100 acres	10	2.9
Number of working days per horse per year	54	148
Number of working horses kept per 100 acres of arable land	14.3	5.7
Cost of horse labour per working day .	£0 10 0	£0 4 10
Cost of upkeep per horse per year .	26 15 11	35 15 4

"It will be seen that the horses are undoubtedly kept cheaply, but the fact that they can be found employment for little more than one day a week makes the actual cost of horse labour per working day more than double the average.

"The Danish records already referred to show that this is a common failure in that country, as can be seen from the table on p. 51, obtained from a study of Dr Larsen's figures.

"The really small holding of under 25 acres is nearly four times as heavily stocked with horses as is the large holding, for that country, of over 250 acres. The influence of the individual attention which can be given on the small holding is seen from the fact that on these holdings the food consumption and the total cost of upkeep have been reduced by nearly one-half. The fact that the horses on the small holdings cannot be kept busy is brought out when it is realised that on the smallest holdings they worked 94 days per head per year, and on the largest for 212.

"The skill in management of these men is shown by the fact that in spite of the small number of days worked by the horses, the cost of horse labour was only eightpence per working day more than on the largest holdings which could keep horses busy."

The value of the individual attention that is given to stock by the small holder is seen from a study of Dr Larsen's records of poultry and pigs. From these it will be seen that the small holder stocks his land heavily with birds on the holdings of under 25 acres, possibly too heavily; watches his feeding remarkably closely, with a saving of 3s. a head, as compared to those on the holdings of over 250 acres, where the birds would be most probably looked after by hired labour; while the larger profits per bird and per pig were made on holdings in the one case just under, and in the other just over, 50 acres.

CONCLUSION.

In conclusion, I think it must be admitted that the small-holding system as at present adopted, in England at all events, has been to a large extent a costly failure, mainly through following too slavishly the methods that have been adopted in other and principally smaller countries. Yet success could so easily be attained, and lies ready waiting to be boldly grasped.

Unless on a specialised farm, I would put no man—who expected to make a living by it—on a holding of less than 35 acres, and would hesitate to put him on one of less than 50 acres, and I would extend the working of the Act to make it applicable to at least a holding of 75 acres, and, wherever possible, make it reach as near as possible to that limit; and lastly, I would select, and carefully select, the men to be placed upon them.

POULTRY.

Size of Holding.	No. of birds kept per 100 acres.	Expenditure per head.			Profit.		
		Food.	Labour.	Total.	Per Holding.	Per acre.	Per bird.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Under 25 acres . .	294	0 8 0	0 2 4	0 10 4	9 0 0	1 12 0	0 4 11
25 to 50 acres . .	132	0 8 10	0 1 8	0 10 6	13 10 0	0 19 8	0 5 6
50 to 75 acres . .	122	0 9 10	0 1 9	0 11 7	17 0 0	0 14 0	0 4 6
75 to 100 acres . .	72	0 10 2	0 2 1	0 12 3	13 0 0	0 7 6	0 4 2
100 to 250 acres . .	39	0 10 10	0 1 10	0 12 8	15 10 0	0 4 10	0 4 3
Over 250 acres . .	30	0 11 0	0 2 3	0 13 3	17 0 6	0 1 6	0 3 10

There would be no possible objection by any party, political or otherwise, to the simple alteration in the working of an Act in this way, but its effect socially and economically would undoubtedly be enormous, and in my opinion it would do untold lasting good to the agriculture of the country, particularly if some system of cheap credit were made more readily available for really deserving cases.

PIGS.

Size of Holding.	No. of food units fed per pig.	Proportion of food fed			Labour bill per pig.			Profit per pig.		
		Meal.	Milk or Whey.	Coarse Fodder.						
		%	%	%	£	*s.*	*d.*	£	*s.*	*d.*
Under 25 acres .	509	62.6	22.5	15.9	0	19	6	0	12	2
25-50 acres . .	542	67.8	21.3	10.9	0	10	4	0	16	3
50-75 acres . .	530	74.8	19.2	6.0	0	8	4	1	8	6
75-100 acres .	550	71.8	20.7	7.5	0	9	0	1	0	6
100-250 acres .	574	71.7	20.1	8.2	0	9	10	0	13	2
Over 250 acres .	618	75.8	17.8	6.4	0	13	1	0	3	6

While I have had few opportunities of studying the financial records of small holdings in Scotland, and should welcome further opportunities of doing so, yet those that I have seen again bring out quite clearly their typical strong points :—

(*a*) High production.
(*b*) High output.
(*c*) High employment of labour.
(*d*) Good management of stock and, what one rarely meets with on small holdings either in Denmark or England, good management of the arable land and crops.

On the other hand, they bring out quite clearly their typical weak points :—

(*a*) High production costs.
(*b*) High capitalisation.
(*c*) High rents.
(*d*) High labour bills.

While in England many men with little practical knowledge and experience have, particularly in recent years, been placed upon small holdings with no reasonable chance of success, in Denmark only men of long training and wide experience have been given an opportunity of taking those provided by the State ; and in Scotland, so far as my limited knowledge goes, most of the men are of the right type to make good.

Hence, in both of the latter countries most small holders are holding their own and more than making a living, in spite of the difficulties with which they have to contend.

FEEDING FOR MILK PRODUCTION.

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THE two factors of greatest importance in determining the production of a dairy cow are breeding and feeding. The breeding of a cow determines her inherent ability to produce milk, and her feeding allows her to exercise her milk-producing powers to the utmost or prevents her from showing her true worth—depending on whether the feeding is liberal or scanty. It is needless to argue whether good breeding or good feeding is the more important—both are essential. Well-bred cows—those with a natural inherent ability to produce large amounts of milk—can only do their best work when liberally fed, but poor cows cannot be converted into high producers even by the best of feeding.

Of the individual items which enter into the cost of milk production that of feed is undoubtedly the most important, as it is the largest, and, on the average, will be greater than all other items combined. Roughly, the feed cost may be considered as constituting 50 to 75 per cent, and averaging about 60 per cent of the total cost of milk production. It is evident, therefore, that the feeding of the milk-producing cow deserves great attention, as even relatively small economies made in the cost of feeding may constitute all the difference between running a herd at a loss and making a fair profit.

If herds be considered as a whole, it will be found that many are underfed at certain seasons of the year, while a few are overfed, and such conditions militate against economy of production. When individual animals within a herd are considered, however, it will generally be found that there are even greater differences in the efficiency with which individual animals are fed than there are in the methods of feeding separate herds. This is due to the fact that in spite of the difference in production of the individual animals, there is a great tendency to feed all the animals in the herd alike, or at least not to make sufficient difference between the high and low producers. As a consequence the poor producers are overfed, and so very frequently leave no profit, while the good producers are underfed, and so ultimately produce less and leave a smaller profit individually than they should, and part of the reduced profits obtained from them has to go to pay the losses on the poor producers, thus markedly lowering the net returns from the herd.

THE REQUIREMENTS OF THE COW.

The milking cow requires feed for the maintenance of her body and for productive purposes. Under the term production can be included growth, fattening, the production of a calf, and milk production. Of the productive functions of the cow that of milk production is by far the most important from a commercial point of view, but the others must not be neglected.

For maintenance and production the cow utilises the nutrients provided by her ration, and if it were possible to determine accurately the absolute requirements of the cow for nutrients and the amounts of the various nutrients that she could obtain from feeds, then the feeding of dairy cows would be a very simple matter. Though many attempts have been made to evolve a feeding standard to control the feeding of dairy cows, the results have not been entirely satisfactory.

A modification of the Morrison feeding standard shows that the dairy cow requires for maintenance .70 lb. of digestible crude protein and 7.23 lb. of digestible carbohydrate equivalent per 1000 lb. live-weight daily, while the production requirements per gallon of milk containing 3.75 per cent of butter-fat are .57 lb. of digestible crude protein and 2.57 lb. of digestible carbohydrate equivalent. With these figures, and a table showing the percentage of digestible nutrients in the various feeds, it is easy to calculate a ration which will meet the theoretical requirements of the cow for nutrients. Such a ration, however, may be very far from meeting the actual needs of the cow, and no guide is obtained as to the economy of the feeding operations.

The main value of such a standard is in teaching some of the fundamental principles of nutrition, and it does give some idea of the general requirements of the animal for nutrients. It also shows that for the production of three gallons of average milk, as much digestible carbohydrate equivalent and two and a half times as much digestible crude protein is required as is needed daily for maintaining the body of a 9-cwt. cow. This simply emphasises the importance of feeding in the production of milk.

To a considerable extent the main classes of nutrients—proteins, carbohydrates, and fats—can be used interchangeably in the animal body; for example, proteins can be used for the building up of body-fat, and the functions of the fat of the ration can be almost completely taken over by the carbohydrates. In spite of this, however, no one nutrient should be used to the exclusion of any other if the best results are desired.

Proteins are absolutely essential for the repair of body tissue and the formation of the nitrogenous constituents of the fœtus and the milk, though most of the other duties performed by the proteins can be taken over by the carbohydrates and fats. It does not pay, however, to feed just the minimum amount of protein required for these vital processes, as additional protein has a stimulating effect on general metabolism and consequently on milk production. On the other hand, proteins are as a rule much more costly than are the other nutrients, and therefore too much protein in the ration will render milk production uneconomical. It is evident, therefore, that a balance must be maintained between the protein and non-protein constituents of the ration, and the exact balance to be used will be determined by the requirements of the individual animal and the relative costs of the various nutrients in the feeds available.

Similarly, carbohydrates and fats can be used interchangeably for certain purposes, and yet a proper balance from the nutritional and economic standpoints should be maintained between them.

Feeding standards recognise only the main classes of organic nutrients, no attention being paid to the ash content of the ration, to its supply of vitamines, or to the quality of the proteins it contains. These are very important factors, and the main reason they have not received consideration in the formation of feeding standards is due to the fact that very little is known regarding the actual requirements of the cow for these items.

If a cow is fed a ration that is deficient in one or more of the necessary nutrients she will draw on her own body for the supply of these nutrients necessary for milk production, and when her body reserves are exhausted she will decline in yield. Many cows are forced through improper feeding to do this every year. They produce milk in fair quantities for a few months after calving in spite of the poor rations they are fed. Then, when their body-stores of nutrients are depleted, they decline rapidly in production, and finally go dry. They then store up nutrients during the dry period, and are ready for another short spurt at milk production.

A proper balance of nutrients should be maintained in the ration, but what that balance of nutrients should be is rather difficult to state. There are many factors which influence the required balance of nutrients, and they are not all thoroughly understood. However, a few that are perhaps of most importance may be considered here.

Age.—Young cows are still growing while they are producing milk, and their ration should contain the nutrients required for this growth. Consequently a ration for milking heifers will require more protein and ash in proportion to the other nutrients than will a ration for older cows, as these are the nutrients specially demanded for the purposes of growth. If young cows are not liberally fed they will either produce less milk than they should, or they will be stunted in their development.

Size.—The influence of the size of the cow on the balance of nutrients required in her ration is rather a complicated one, but on the whole it may be said that the small cow, other things being equal, will require relatively more protein in her ration than will the large cow.

Condition.—Animals in poor condition should be fed a ration of wide nutritive ratio—that is, with a relatively large amount of fats and carbohydrates. Dairy cows should not be kept in low condition if they are to give their best production. Cows in low condition should receive a liberal allowance of carbohydrates and fats in order that their body-stores of nutrients may be replenished, and they will then be able to produce for a longer period. Conversely, animals in high condition should be fed a ration of narrow nutritive ratio in order that the further production of body-fat may be prevented as far as possible, since excessive condition is not conducive to maximum milk production.

Milk Yield.—The higher the milk yield, the greater will be the amount of nutrients required for the production of each pound of milk. It is very probable also that an increase in milk production will call for a more than proportional increase in the amount of protein required.

The richer the milk, the greater will be the amount of nutrients required for the production of each pound. As the protein content of milk does not increase as rapidly as the fat content, a narrower nutritive ratio is required in the ration when a poor milk is being produced than when a rich milk is secreted.

As lactation advances the impetus to milk secretion declines, and so more nutrients will be required for the production of each pound of milk towards the end of the lactation than was required at the first, if the production at the two points remains the same. This is due to a decline in the impetus to production. In the later stages of lactation the cow is usually pregnant, and though experimental work apparently shows that very little feed is required for the growth of the fœtus, it is probably best to provide for the cow at this stage a ration with a good supply of protein and ash for the growth of the calf. At the same time, however, it will be necessary to build up the body reserves of the animal in preparation for the next lactation, and the desired increase in weight can usually be obtained by the liberal use of carbohydrates and fats.

Though it has been stated that the higher the yield of milk or the greater the percentage of butter-fat present, the greater will be the amount of nutrients required for the production of each pound of milk, it must be remembered that this applies to the production ration only as distinguished from the feed required for maintenance. If the cow remains constant in weight, her maintenance ration is constant no matter what her production may be, and in arriving at the feed cost of production there must be included not only the actual production ration but also the maintenance ration. Consequently, when both the production and maintenance rations are included, it will be found that the greater the yield of milk or the higher the percentage of butter-fat, the lower is the feed cost of production.

Individuality.—Individual cows vary not only in the total amounts of nutrients, but also in the relative proportions of the various nutrients which they require for maintenance and production. Cows of the same weight and producing equal quantities of milk of the same quality will vary in their requirements. Such variations are due to the "individuality" of the animals, and cannot be accounted for or controlled. The only solution for this problem is to cater to the needs of the individual cows as far as possible.

CHARACTERISTICS OF A GOOD RATION.

A ration may contain all the nutrients in digestible form that a cow requires for maintenance and production, and yet it may be not at all suited to her needs. If the best results are to be obtained, there are many other points which must be given consideration. The majority of these factors are very simple, and at first may appear of no great importance, but attention to them will do much to keep the herd producing to the best of its ability.

Palatability.—The dairy cow has her likes and dislikes, and these must be catered to. The ration must at all times be palatable. It is not known that the palatability of a feed is determined in a direct way by the amount of nutrients it contains; but if the ration is unpalatable, the cow will not consume as much of it as she needs for maximum production, and the chances are that under these conditions she will not make the very best use of the feed that she does consume. For the best results, therefore, a good palatable ration is necessary.

It is not possible to rank feeds absolutely according to their relative palatabilities, but it may be said that as a general rule the succulent feeds and the leguminous hays are the most palatable roughages, while the cereal grains are perhaps the most palatable concentrates. The by-products used as concentrates are in some cases not very palatable. There are many exceptions to this, however; for example, rye, though a cereal grain, is not very palatable, while wheat bran and linseed cake, by-products used in feeding, are exceptionally palatable. Some feeds are unpalatable at first, but the animals acquire a liking for them. This is frequently true of feeds such as cotton-seed products and maize gluten feed.

The method of preparation has a distinct influence on the palatability of a feed; thus the cereal grains and the legumes such as beans are usually fed ground. The ground grains are generally more palatable to and better utilised by the cows than are the whole grains. On the other hand, work at the West of Scotland Agricultural College shows that young calves prefer whole oats and maize to the ground grains.

The condition of a feed determines its palatability to a large extent. Badly weathered hay, mouldy grain and silage, and decayed roots are quite unpalatable, and care should be taken to have all of the constituents of the ration in good condition. Where there is risk of hay not keeping, a little salt added at the time of stacking will improve its palatability. When feeds have become unpalatable, a little treacle water sprinkled over them will frequently render them palatable.

The individual peculiarities in the tastes of cows are not always easy to cope with, but they must be catered to if high production is desired. Feeds that are usually palatable may at times be eaten but sparingly, or even be absolutely refused by some cows. Then a change of ration is desirable. Palatability is based to some extent on the needs of the animal, but it is also governed by her past experience. If a cow has been overfed on any feed it is sometimes unpalatable to her for a long time afterwards.

Cows will not clean up feeds that are unpalatable to them, and as they very probably do not utilise unpalatable feeds to the greatest advantage even when consumed, it can be seen that unpalatable feeds are doubly unprofitable. In some cases cows that are considered poor feeders and low producers can be rendered more productive by changing their feeds so as to provide them with a more palatable ration. This emphasises the necessity of individual feeding where large and economical production is aimed at. It shows that lack of care in the selection of the feeds for the ration of the milking herd may result not only in a waste of high-priced feeds, but also in lowered milk production. Upon the ability of the feeder to determine the most palatable ration for each of his animals depends the size of the records of the individuals in the herd.

Variety.—A mixture of feeds from one plant source, such as oat silage, oat straw, and ground oats, with perhaps one concentrate from another source, does not constitute a ration with sufficient variety, whereas a combination of feeds from distinct plant sources such as swedes, mixed hay, ground oats, wheat bran, distillers' dried grains, and soy-bean meal, gives real variety.

A ration consisting of a number of feeds from different sources is much more palatable than a ration made up from a more limited assortment. Frequent and radical changes in the ration are not to be recommended, as they tend to throw the cow off feed and cause digestive troubles. Rations composed of a limited number of constituents may become unpalatable when fed for a long period, so rations with plenty of variety are recommended. Even such rations occasionally become unpalatable or unsuited to the needs of the cow, but their alteration is an easy matter. The proportions of the various constituents present can be altered, one or more constituents left out, or new constituents added or used to replace constituents already present. In this way the ration can be kept in accord with the needs of the cow for maintenance and production, and yet be palatable at all times. Slight changes in the proportions of the constituents of a ration will usually do more towards increasing its palatability than will radical changes in the whole ration.

For good producing cows in winter two roughages should be provided, and one of these should be succulent, and where possible three or more constituents should be included in the grain ration. Generally the succulent roughage will be roots, though it may be silage, or dried beet pulp may be the only material available for the provision of succulence during winter. Among the dry roughages there is nothing to equal good hay, and the more legumes it includes the better. In the concentrates there is a wide range to choose from, and the feeds used will depend largely on the home production of grains, such as oats, barley, and beans. When the home supplies are known, the necessary balance required can be made up from purchased concentrates.

Variety in the ration, with occasional slight changes in the concentrate allowance, will very frequently be all that is needed to keep the ration palatable and the cow producing to her maximum capacity. In other cases, especially with high producers, it will occasionally be found advantageous to replace the grain ration with a bran mash. This gives variety, stimulates the appetite, has a laxative cooling effect on the digestive system, and can be highly recommended when cows become sluggish in their feeding.

Recent work has shown that other advantages are to be obtained from variety in the ration. The proteins from different plant sources are not all of equal value for maintenance and production, and a mixture of proteins from different plants is generally better than a single protein. Consequently variety in the ration improves the quality of the protein supply.

In the same way the vitamines are unevenly distributed in the various feeds. Little is known of the possible requirements of the cow for vitamines, but where the constituents of the ration are sufficiently varied there is little danger of a vitamine deficiency.

The requirements of the cow for minerals in the ration are not easy to determine accurately. The ash constituents in greatest demand, in addition to common salt, are lime and phosphoric acid. In a two years' trial conducted by the West of Scotland Agricultural College with a herd of cows, it was found that the addition of steamed bone flour to the ration throughout the greater part of the winter and spring brought no increase in milk yield. With a good mixed pasture in summer there is no danger of a deficiency in the ash supply, and by providing sufficient variety in winter the danger of an ash deficiency is reduced. The one practical way of providing a proper ash supply in winter is through the feeding of good hay.

Bulk.—The dairy cow has a large, roomy, digestive tract, specially suited for the handling of bulky feeds, and she can utilise a bulky ration much more efficiently than one of too concentrated a character. There are two main reasons for this. Bulky feeds are easily regurgitated, and so are more thoroughly masticated and better prepared for further digestion than are concentrated feeds. In the digestive tract of the cow heavy or concentrated feeds tend to form compact masses which resist the action of the digestive fluids, and so do not yield all the nutrients they are capable of providing. In some cases they may even cause serious digestive disturbances.

When plenty of bulky feeds are present in the ration the best digestive action is obtained, as the hay and other bulky materials keep the particles of grain and other concentrated feeds apart and allow them to be thoroughly acted on by the digestive juices. In a trial to determine the influence of condition on the maintenance requirements of dairy cows two animals in high condition were kept on a maintenance ration for over four months; then, after being brought down in condition, they were again kept on a maintenance ration for five months. During each maintenance period a digestion trial was conducted. Throughout the ration consisted of maize silage, clover hay, hominy feed, and wheat bran. When the animals were in high condition the total weight of the daily ration was 26.9 per cent greater than when they were in low condition, and as the ration was of the same composition throughout, the ration fed when the cows were in good condition would fill the digestive system to a greater extent than did that fed when the animals were in low condition. When the larger ration was being fed, the coefficient of digestibility of the dry matter of the ration was 66.94 per cent, while when the smaller ration was being fed it was only 59.77 per cent. This shows that the ration must have a certain amount of bulk before it can be efficiently utilised.

Then, again, it has also been shown that even with young calves bulk is necessary in the ration. In the new-born calf the paunch is relatively small, but at an early age it begins to develop much more rapidly than the other compartments of the stomach, and some bulky feed like hay must be provided to aid in the development of the paunch. If calves are not provided with hay they will not develop normally, and no matter what be fed, if hay, or some similar bulky feed, is not provided, the chances are that the calf will die by the time it is six months of age.

As the cow is pre-eminently a handler of roughages, it is usually economical to allow her to consume as much as possible of the rough feeds grown on the farm. This not only forms a market for the home-grown feeds, but the presence of the bulky feeds in the ration allows her to utilise the concentrates fed more efficiently than she otherwise would. Practical experience has shown that the best results over a long period of time will be obtained when the roughages, such as roots, silage, hay, and straw, provide about two-thirds of the dry matter of the ration and the concentrates one-third. With high-producing cows the dry matter in the grain fed sometimes exceeds that given as roughage, but long-continued feeding by such methods cannot be endorsed, as it is an enormous strain on the digestive powers and producing and reproducing abilities of the animals.

It is advisable to have some bulky constituents in the grain ration in addition to the bulk provided by the roughages, and this is especially important where a large allowance of concentrates is given. Useful materials for this purpose are ground oats, wheat bran, and brewers' or distillers' dried grains. When such feeds are too highly priced to be fed, bulk can be obtained in the grain ration by the addition of a little chopped hay.

Succulence.—Succulent feeds have a very beneficial effect upon milking cows, and are essential for the most economical milk production. The benefits to be derived from succulent feeds are due to a considerable extent to the fact that they render the ration palatable, are laxative in action, and provide part of the large amount of water required by high-producing cows.

Good pasture grass is the best succulence for dairy cattle, and in late spring and summer it will provide as a rule all the succulent feed they require. Towards the end of summer and in autumn feed tends to be scarce on many pastures, and then soiling crops and, later, roots or silage should be used to provide additional succulence. In winter roots are the general succulence used. Where they are difficult to produce, silage can be used to advantage, and where the root break is not large, soiling crops can be grown in some districts for use in spring until the pastures are available. Dried beet pulp, which is soaked before feeding, is also a convenient succulence for use in winter. Some form of succulent feed should be included in the ration of the dairy cow throughout the year.

Effect upon the System.—To work profitably the dairy cow must be in good health, so the feeds she receives must keep her digestive tract in its best working condition and also maintain her in general good health. The cow will do her best work when the ration is slightly laxative in action. Succulent feeds have a beneficial effect on the digestive system and general health of the cow. Hay containing plenty of clover is also slightly laxative in action.

The cotton-seed products have a constipating effect, and when fed in too large quantities may even become toxic. They should never be fed to cows near the end of pregnancy, nor to calves under weaning age. Feeds such as wheat bran and linseed-cake have a laxative and cooling effect, and should as a rule be fed when constipating constituents are included in the ration. They are especially valuable where no succulent roughage is available. Malt culms tend to be unpalatable and to cause digestive disturbances, and so should be carefully fed. Draff is an excellent feed for milk production, but when fed in large quantities over long periods of time it taxes the capacity of the cow, and may have deleterious effects, especially on her breeding powers.

Feeds that are mouldy or otherwise spoiled tend to cause digestive troubles. They may also cause derangements of general health, or even be poisonous, and so should be avoided. The dangers of mouldy feeds are not so great with cattle as with horses. Feeds of doubtful character should be avoided as far as possible, and in compounding a ration care should be taken that it is laxative in action, and that feeds which might produce undesirable results are not fed in too large amounts.

Effect upon the Products.—Milk, butter, and cheese are the marketable products of the dairy farm, and care must be exercised that the ration of the cows does not adversely affect their quality in any way. The first essential in the production of good butter and cheese is the production of good milk, and it is easier to keep bad flavours out of milk than it is to dispose of them once they have gained entrance. As a rule, feeds do not influence the flavour of milk if the feeding is properly done. Feeds such as swedes, cabbage, rape, and silage will taint milk if the feeding is carelessly done, but if they are fed after milking and any unused feed removed from the byre as soon as possible, there is no danger of the feed tainting the milk.

Some feeds influence to a limited extent the consistency of butter. Linseed and earth-nut cakes, maize gluten products, rice meal, and fresh grass all tend to produce a soft butter, while palm-nut and cocoanut cakes, cotton-seed products and bean meal produce a hard butter. These feeds do not as a rule produce marked effects unless fed in large amounts, and by balancing the constituents of the ration such influences can be minimised. The feeding of cotton-seed in summer is often advisable, as it tends to firm the butter, which is sometimes too soft at that season. Fresh young pasture grass and carrots are noted for the rich yellow colour they impart to milk and butter.

Here may also be mentioned the influence of feeds on the percentage of butter-fat in milk. There is no feed known which can be depended on to give a permanent increase in the percentage of fat in milk. In some cases an increase in fat content is apparently obtained when certain feeds are fed, but this is largely accidental. Where a temporary increase in fat percentage is obtained, it is usually due to digestive and other disturbances induced by the introduction of some feed suddenly or in too large amounts.

SUMMER MILK PRODUCTION.

Maximum milk production is usually obtained during the early part of summer shortly after the cows are turned to pasture. At this season circumstances are most favourable for milk production, and similar conditions should be maintained as far as possible during the remainder of the year. The influences which render early summer almost ideal for milk production are an abundance of succulent palatable pasture, which provides nutrients in plenty, and the equable climatic conditions of that period.

Turning the cows to pasture not only cuts down the expenditures of feed and labour to considerably below the winter level, but it stimulates the production of the cows, not only for the short time immediately after they go to pasture, but also for the remainder of the lactation. The changes in the yield and composition of milk that occur when the cows are turned to pasture vary greatly with individual conditions. If the cows have not been too well fed during winter and spring, and are not above average in condition, the milk yield will increase markedly when the cows are put to good pasture and the percentage of fat present in the milk will generally decrease for a time. If the cows have been liberally fed and are in good condition, the change to pasture will as a rule increase the milk yield to some extent, since good pasture is superior to the best winter feeding, but not as markedly as when the cows have been underfed during winter and spring. It has also been found at the West of Scotland Agricultural College that when the cows are turned out to pasture in good condition, the percentage of fat in the milk will increase for a time and then come back to normal.

In changing the cows from winter feed to pasture it is best to proceed slowly, especially in the case of heavy-milking cows, as the young immature grass of spring contains a very small amount of dry matter, and it is difficult for a heavy-milking cow to consume enough of such feed to meet her requirements at the start, and the young grass also tends to cause scouring.

When the herd is turned to pasture the winter roughage is cut down rapidly and the grain ration more slowly. The feeding of a little hay for a short time after the cows are put on pasture helps to counteract the laxative action of the grass. As soon as the cows have become accustomed to pasture, all other feeds can be eliminated except in the case of the heaviest producers, and even they should not receive more grain than is absolutely necessary to keep their production at its normal level.

The elimination of grain from the ration after the cows are turned to pasture has everything to recommend it. The absence of concentrates from the ration at this time allows the digestive system of the cow to rest, and she is in a better condition to handle grain when the feeding of it again becomes necessary.

Though cows of average producing ability will be amply supplied with feed from the pasture alone during the greater part of the summer season, yet in late summer and autumn the pastures tend to become short, and then additional feed must be provided if the milk supply is to be kept up. This can be done by the provision of additional pasture, the use of concentrates, the feeding of silage, or the production of soiling crops.

Provision of Additional Pasture.—Generally a definite area of pasture is allotted to the cows. If hay aftermath or stubble ground can also be given to the cows, it will generally be found that this aids in keeping up the milk yield during autumn.

Use of Concentrates.—The feeding of concentrates during summer is generally expensive, but there are conditions under which it is warranted. Heavy-producing cows should receive grain while at pasture. In addition, when the pastures fail in autumn some concentrates should be fed to maintain the production of the herd if no other pasture supplement is available. A small allowance of grain in autumn will maintain the milk yield, put the cows into good condition for calving, and improve the yield during the subsequent lactation.

Feeding of Silage.—Good silage is an excellent supplement to poor pasture, but as the silo capacity is generally limited, the silage produced is used as a winter succulence in place of roots.

Production of Soiling Crops.—The production of soiling crops for use in late summer and autumn has not received the attention it deserves. The use of soiling maintains a supply of succulent feed at a time when it is often otherwise difficult to provide—from the time the pastures pass their best until the turnips are ready for use. The value of soiling lies in the fact that a variety of succulent feeds can be provided, and this has a stimulating effect on production.

WINTER MILK PRODUCTION.

The systems of winter feeding vary much more widely than do summer feeding practices. This is due to the variations in the types of dairying pursued and to the supplies of roughages available. Where cheese is made, the general aim is to produce very little milk during winter, and there, of course, the feeding will be less intensive than in dairies where a winter supply of milk must be maintained. Even here, however, some cows will be in milk in winter, and the feeding for them should be the same as in other dairies, for the simple reason that if a cow is in milk she must be kept producing to her maximum if the most profitable results are to be obtained.

The feeding of milking cows in winter will be determined mainly by the available supply of roughages. For the best results a succulent feed and at least one dry roughage should be provided, though very frequently both hay and straw are fed. The succulent roughages most generally used are roots—turnips, swedes, and mangolds. The amount of roots fed depends entirely on the supply, and may vary from 20 lb. or less per cow per day to 60 lb. or more, though the feeding of over this amount is generally not good practice.

Silage is now being used to some extent, and may be fed either as the sole succulence or with roots. Where fed as the only succulent feed, 20 to 30 lb. per head daily is a fair allowance. The choice between silage and roots will depend ultimately on the yields that can be obtained per acre and the cost of production. Where roots can be grown satisfactorily they are not likely to be replaced by silage, but in districts where roots are a failure, silage can perform a very valuable function. At Holmes Farm it was found that one ton of swedes was equal to 11½ cwt. of oat, pea, bean, and vetch silage for milk production. This means that if a crop of 25 tons of swedes per acre can be obtained, then 14 tons 8 cwt. of silage must be fed out of the silo to get the same carrying capacity per acre. If it is presumed that the loss from the time the crop is cut until it is fed out of the silo is not over 10 per cent, then the silage crop as cut must yield 16 tons per acre.

Where draff is available it is found to be a useful succulent feed for stimulating milk production. As a rule not over 30 lb. per head daily should be fed to breeding animals, though with a flying stock larger amounts are given. Dried beet pulp can also be used to replace silage or roots, wholly or in part, and up to 8 lb. of the pulp can be fed when it is used as the sole succulence. It should be soaked before feeding.

The dry roughages fed are hay and straw, but wherever possible at least half of the dry roughage allowance should be good hay. In far too many cases the sole dry roughage provided for milking cows during winter is straw. In cases where no succulence is available, hay should be fed in abundance and little or no straw. Where roots are fed liberally the straw may be increased at the expense of the hay, but even then it is better if some hay be fed.

It is frequently difficult to provide succulent feed in spring —when the roots are finished and before the pastures are ready. In some sections winter rye and vetch make a good soiling crop for use at this time.

The roughage ration should provide enough nutrients for the maintenance of the animal and the production of the first gallon of milk, but for additional milk extra feed must be provided in the form of concentrates. It is not possible to recommend grain mixtures which will be suitable under all conditions, as the choice of concentrates depends largely on local prices and the supply of roughages available. Oats and barley are satisfactory for the provision of energy-forming materials, as is maize meal, and the choice between them will be determined largely by their cost.

Where succulent feeds are available the choice of the high-protein concentrates, which generally have to be purchased, will be determined largely by the cost of the digestible crude protein which they provide, but where succulence is scarce the action of the feed on the digestive system of the animal is a factor of special importance. Cotton-seed products, on account of their constipating action, are not suitable for cows receiving no succulent feed, whereas wheat bran and linseed-cake are especially valuable under such circumstances.

Roots and hay can be taken as the basis of rationing. A suitable basal ration for a cow of 9 cwt. live-weight will be 40 lb. of swedes and 16 lb. of hay, but would have to be altered in amount for a larger or smaller cow. It is not always possible to feed the roughages in just those proportions, but if it is remembered that 1 lb. of hay is about equivalent to 5 lb. of swedes, it is easy to fit the ration to the supplies of feed available. Then in cases where no succulent feed is available, ½ to 1 lb. of treacle should be given to keep the ration laxative.

Though swedes have been taken as the standard, other root crops can be substituted for them according to their relative feeding values. Silage is now becoming quite popular in some districts, and 25 lb. of silage will replace 40 lb. of swedes, or they can be replaced by 6 lb. of dried beet pulp. Where draff is fed it is best to consider it as part of the production ration and allow 14 lb. per gallon of milk.

In many cases some straw must be fed, and then some additional concentrate allowance must be made, and a good plan is to allow, for each 4 lb. of hay substituted by straw, ½ lb. of bean meal or similar feed.

The roughages take care of the maintenance of the cow and the production of the first gallon of milk, but for all the milk produced in addition some concentrates must be fed. The concentrate mixture should consist of three or more feeds, and contain 15 to 20 per cent of digestible crude protein. A very large number of mixtures can be made up to meet these requirements, and some individual feeds are available which provide just about the amount of nutrients called for —a notable example is bean meal. It provides just about the amount of nutrients called for in the production ration, but yet the feeding of it as the sole supplement is not the best practice. It is fairly palatable, but a mixture of feeds is more palatable; it does not provide variety, and it lacks bulk.

A suitable allowance of a mixture of concentrates is 3½ to 4 lb. for each gallon of milk after the first. This may seem a heavy allowance of concentrates, but it must be remembered that no concentrates are fed for the first gallon of milk produced, and so a 3-gallon cow would be getting only 7 to 8 lb. of grain, and a 4-gallon cow 10½ to 12 lb., which is not force feeding. The allowance per gallon will depend on the nature of the mixture, and the mixture to be used will depend on the relative prices of feeds. When the mixture contains about 15 per cent of digestible crude protein, 4 lb. per gallon of milk will be required, but when the digestible protein content approaches 20 per cent, then only 3½ lb. per gallon after the first will be needed.

Where winter milk is produced the cows generally calve in the autumn, and with good feeding methods their milk production can be maintained at a high level for a considerable period, and then they should be in such condition that when they are ready to decline in milk yield, the early pastures will stimulate them to still further production.

PREPARATION OF THE COW FOR PRODUCTION.

The production of a good milk record is a heavy tax on the dairy cow. She should not be expected to keep on producing milk year after year without a rest. For best results the milk cow must have a rest of six to eight weeks between lactations in order that she may be prepared for the work of the succeeding year. During this period her digestive system should be cooled and rested, the reserve stores of nutrients in her body built up, and she should be provided with the nutrients for the growth of the unborn calf, the greater part of the dry matter of which is formed during the last few weeks of pregnancy.

If the cow is dry in summer she will need very little feed, if any, in addition to what she can obtain from good pasture, unless she is in low condition, when a little bruised oats will have the desired effect. When the dry period occurs in winter a fair allowance of roots or other succulence and a liberal amount of hay should be given. Where the supply of succulence for the winter is limited, however, it is better to save it for use after the cows calve rather than feed it to the dry cows. Too often cows are carried through the dry period in winter on roots and straw. Hay in place of straw, or an allowance of concentrates, will bring the cows into better condition, and they will milk better during the subsequent lactation. If in poor condition they should receive a ration consisting of such feeds as bruised oats, wheat bran, linseed-cake, and earth-nut cake.

The main object in feeding the dry cow is to get her into good condition so that she will be ready for her year's work. It must also be remembered that the condition of the cow at the time of calving is the most important factor, in addition to her individuality, in controlling the percentage of fat in her milk. The cow calving in good condition will give a higher percentage of fat in her milk after calving than she would if calved in low condition.

When the cow approaches calving her grain ration should be reduced, and it should then be laxative in nature. A mixture of two parts wheat bran and one part linseed-cake is very valuable at this time. In the last day or two of pregnancy the roughage ration should be limited, and all grain, except perhaps an occasional bran mash, cut out. Freedom from milk fever and other calving troubles can be largely prevented by good handling just before calving. For a day or two after calving the cow should have bran mash in addition to a limited amount of roughage. A mixture of bran and oats, with the addition of a little linseed cake, may be used to replace the bran in a day or two.

The cow should not be forced on to full feed immediately after calving. This generally results in throwing the cow off feed and reducing her production. Beginning with 4 or 5 lb. of grain per day on the fourth or fifth day after calving, the grain should be increased at the rate of 1 lb. every third or fourth day, so long as the cow continues to increase in production. At this stage—that is, when the milk yield does not increase in response to additional grain—the allowance of concentrates should be slightly reduced, and it will generally be found that the cow will then increase still further in production. In other words, the cow does her best work when her digestive system is not overloaded. The amount of grain that the cow is being fed at this time is about what she should receive until she begins to decline in production owing to advance in lactation. Less would lead to decreased production, while more would lead to fattening with ultimately diminished production.

Starting the cow properly on her work for the year is of paramount importance, as she cannot do her best work unless properly fitted during the dry period, and carefully tended both before and after calving.

FEEDING METHODS.

The supplying of the cow with the requisite amount of feed is not the only feeding problem with which the dairyman is confronted. The ration should not only be of the proper character but should be fed in the best possible manner. The influence of the method of feeding on the production of the cow and on the economy of production must be considered.

Much more important than the time or order of feeding is the regularity with which it is done. The cow must have her regular meal hours, and they should be fairly frequent. Where roots are fed in large amounts they should be given in three feeds, though with smaller amounts fewer feedings may be sufficient. Silage is generally given in two feeds daily.

Hay and straw should be given at two or three feeds and the concentrate allowance at two feeds, except in the case of heavy-milking cows getting large amounts of grain, and then three feeds per day will be necessary. This allows the cow to make better use of her feed than she would do if it were fed less frequently and in larger quantities. Never should more be fed at any time than the cow will clean up rapidly, and any feed left in the manger should be taken out, as waste feed rapidly spoils, and if then eaten may cause digestive troubles. Many cases of cows going off feed are due to waste feed. The troughs should be examined shortly after feeding, as it is then possible to tell easily if any of the cows are likely to go off feed, and preventive measures can be exercised in time.

Care must be taken in the feeding of the roughages if clean milk is to be produced. Feeds such as swedes and silage which may tend to taint the milk, and hay and straw which are dusty, should be fed after milking rather than before. It is good practice to feed the concentrates before, and the roughages after, milking.

In general herd feeding it is not economical or even possible to make up a grain mixture for each individual, though this is the ideal way. A mixture of concentrates should be made up that will meet the general requirements of the herd, and care should be taken that it is economical. The feeder should know the production of the animals, and then, by means of a measure that holds a known weight of grain, the mixture can be fed according to the production and condition of the animals.

Where all animals are fed alike no more feed may be used than is needed where the animals are fed according to production, but it is used uneconomically. Some cows will get more than they require, and so will put on flesh and decline too rapidly in production; others will obtain too little, and after they have depleted their body-stores of nutrients and gone down in condition, they will decrease in milk yield. In each case the milk yield will not be at a maximum, and the feed cost will be high.

There is difference of opinion as to whether or not the grain should be fed wet or dry. In no case will it pay to cook feed for cows. Where plenty of succulent feed is available mashes are not necessary, but where no succulence can be provided in any other way, the use of mashes may aid in keeping up production.

The concentrates and roughages fed to dairy cows are generally considered high-priced, and so are given some attention, but there is a tendency on the part of many to neglect the water supply of the dairy herd—perhaps because water is cheap. Water must be provided in abundance for dairy cows, as they should have all they want. Heavy-producing cows consume large amounts of feed daily, but the weight of the feed is small when compared with the water consumed. In a trial at Holmes Farm in winter the cows consumed 5½ gallons of water for each gallon of milk produced. This was in addition to the water in the feed, which included silage and roots.

Individual cows vary considerably in their requirements for water, depending on their production and other factors, and so the only sure way is to see that they obtain all the water they desire. The best way of providing water in the byre is by means of individual water bowls, as this assures that the cows have access to water at all times. Where drinking bowls are not available, the cows should be watered at least once daily, and where no succulent roughage is fed, it is better to allow them to have access to it twice daily.

All pastures should be provided with a plentiful supply of good water. Even where the pastures are well watered and drinking bowls are provided in the byres, there should be a water-trough to which the cows have access on their way to and from pasture, as it will generally be found that the cows use it regularly.

The requirements of dairy cows for salt vary very widely. Some consume it regularly, while others apparently do not touch it. Consequently the best way to supply salt to the milking herd is by means of salt blocks.

FEEDING ECONOMY.

The main aim of the dairyman is profit, and attention must therefore be paid to economy of production. Increasing production without corresponding profits is not an incentive to intensive dairying. Intensive feeding leads to increased production, but a point can be reached above which the cost of milk production is so great that the increased production ensuing will not meet in returns the increased cost of feed. In commercial feeding, therefore, the best practice is to push the production of the cows to this most profitable maximum and no farther.

Individual Feeding.—The milk-producing cows must be considered as individuals, and fed according to production. If they are simply grouped together as a herd and fed according to some average, then only average production and less than average profits will be obtained. If the cows be fed according to production it will frequently be found that no more feed, and in some cases less, than was previously given will be required, and the production will increase.

Liberal Feeding.—Many cows produce well for a few weeks after calving—not because of the ration they receive but in spite of it. It is continued heavy production throughout the lactation period that leads to profits, and to induce this liberal feeding is necessary. Many cows are fed straw and turnips as the sole ration when they are dry, and calve in rather low condition, to have this ration continued with perhaps a rather limited allowance of bean meal or ground oats. *Animals so fed may produce well for a short time until their body-stores of nutrients are exhausted, but they cannot maintain their yield at a high level throughout the lactation.* The most important factor in determining the actual milk yield of a cow naturally capable of high production is the feed she receives.

Use of Home-grown Feeds.—The dairy cow must often be looked on as the market for home-grown feeds. Roughages such as roots, hay, and straw, though sometimes marketable at a profit, must generally be disposed of at home. There is no outside market for all of them, and continuous marketing of crops without heavy manuring is an easy way of depleting the fertility of the farm. Through the cow can be marketed the home-grown roughages, and she also frequently forms a good market for such home products as oats and beans. Though the cow can be depended on as a market for the feeds produced on the farm, yet some effort should be made to meet the demands of the market. Do not feed the cow simply what feeds happen to be grown, but try to grow feeds that are suited to the needs of the cow.

Some succulent feed such as roots or silage should be provided during winter, or in their absence draff or beet pulp should be used. Hay of good quality should always be provided, and where straw has to be fed it should never entirely replace the hay. In summer, pasture will form the bulk of the ration, but soiling crops can frequently be used to advantage in autumn and spring.

Home-grown grain such as oats will generally be found an economical source of energy on which to base the concentrate allowance, and the purchase of other energy-providing feeds should be based on their price as compared with home grains and the relative amounts of nutrients they provide. In some cases home beans will form a good source of protein.

The Protein Supply.—The dairy farm can generally furnish the roughages and the energy-providing concentrates, but it is frequently difficult to have a supply of protein-rich feeds that are produced on the farm. These generally have to be purchased, except where there is a good supply of beans or peas available. The ration may be satisfactory in other ways, but for heavy-producing cows an extra supply of protein will be necessary in addition to that provided by the home-grown feeds. As a general rule, this extra supply of protein can only be provided by such feeds as bean meal, soy-bean meal, cotton-seed cake, earth-nut cake, and fish meal.

As the main class of feeds that has to be purchased on the average dairy farm is the group of high protein supplements, some consideration is necessary in their choice. The main point to which attention must be paid in the purchase of these concentrates is the cost of the digestible protein present, as this is the constituent for which they are primarily purchased.

In comparing feeds in this way a few important factors must be taken into consideration. The feeds should always be compared on the basis of the price delivered at the farm, as railroad rates and cartage charges are frequently an important item in costs. Some feeds are not used mainly as a source of protein, but for the provision of energy-providing nutrients, and so cannot be compared on this basis with feeds of high protein content. Consequently it is not possible to compare such feeds as oats and maize meal with cotton-seed or earth-nut cakes.

Granting that the feeds which provide protein at least cost should generally be purchased when protein is wanted, yet there are circumstances under which this rule must be somewhat modified. Where the ration contains no succulent roughage such as roots or silage, feeds such as the cotton-seed products should not be purchased, but laxative feeds, such as linseed-cake, must be employed, even though they provide protein at somewhat greater cost. If care be taken, however, to see that the ration is suited to the needs of the cow in other ways, it will be found that it is best to purchase the protein concentrates on the basis of the digestible crude protein they contain.

BABY BEEF PRODUCTION.

By Professor J. A. SCOTT WATSON, University of Oxford.

For more than a century now there has been a progressive tendency in the direction of marketing meat animals at younger and younger ages. Thus, for example, it used to be the normal practice for pigs to be kept as stores until they were well over a year old, and hence nearly full-grown, before putting them up to fatten. Nowadays such pigs as are intended for the fresh-pork trade ordinarily go to the block at between four and six months, while even for the bacon market, where a larger and rather lean type of carcase is required, the average age for slaughter is probably under eight months. Under the old system one allowed the animal slowly to attain its full size, and only after it had done so did one set about the business of fattening; the modern idea is not only to speed up the growth-rate but to make the animal grow and fatten simultaneously.

In the case of sheep the change has been no less striking. The vast majority of lowland-bred sheep now reach the butcher at an age of from four to fifteen months, as against anything between one and three years; and even hill sheep, which not so long ago were generally marketed at three years old, are now mostly slaughtered as lambs or hoggets, and are only rarely carried beyond the shearling stage.

This revolution in our methods of meat production has been brought about by several interacting causes, one of which has been a gradual but very marked change in the taste of the general public. The consumer has shown a steadily growing preference for small joints and for young tender meat over large joints from mature animals. Thus in the ordinary run of markets the highest price per pound is obtained for sheep of from 30 to 50 lb. carcase-weight, and anything over 70 or 80 sells at a considerable discount. Similarly, pigs scaling from 6 to 10 stones dead-weight always command a relatively higher price than those of greater size.

In the second place, there has been a steady effort on the part of our breeders to improve the meat breeds, particularly in respect of what is called early maturity—the ability to lay on flesh rapidly and to fatten at an early age,—and it cannot be denied that these efforts have been rewarded with a very large measure of success. Even had market requirements remained unchanged, our modern breeds would have been found capable of attaining the market standard at an earlier age than their progenitors. And thirdly, the modern feeder has a wider choice of food-stuffs, and is in a better position than his predecessors to make the most of the capabilities of his animals.

Unfortunately it cannot be said that the same relative progress has been made with cattle as with sheep and pigs. Roughly speaking, a calf of reasonably good beef type, weighing perhaps 80 or 90 lb. at birth, is capable, without any extravagant methods of feeding, of making an average live-weight increase of 2 lb. a day for the first eighteen months of its life. It might thus weigh 9 cwt. at fifteen months old, or about 10½ cwt. at eighteen months, and be fat enough at either age to meet the requirements of the consumer. When we consider that the average age of the cattle slaughtered in the country is probably over three years, and the average weight probably about 11 cwt., it is clear that the prevailing methods of beef production fall a long way short of fully exploiting the animal's capabilities. The typical butcher's bullock in our markets is a beast that has been kept as a store until the age of fully two and a half years; making probably quite good progress during the summer seasons, he has practically stood still throughout the winters, losing in condition what he made in growth. He is then passed on to the feeder, at a weight of about 9 cwt., and with five months of heavy feeding, either on good grass or in courts, he is turned out for the butcher at perhaps 11½ cwt. If one calculates what such a beast has consumed, in maintenance, growth, and fattening, one reaches a figure of something over 7000 lb. of starch equivalent, or nearly 6 lb. of starch equivalent for each pound of live-weight increase that he has made.

If, on the other hand, we consider the case of a fifteen-months-old "baby beef" steer weighing 9 cwt., the total food consumption will amount to less than 4000 lb. of starch equivalent, or 4 lb. starch equivalent per lb. of live-weight increase. Admitting that in the latter case a larger proportion of the food must be given in relatively expensive forms, it is clear that the younger animal is very definitely the more economical of the two. Moreover, there are all the advantages of a quicker turnover of capital and a smaller (because a shorter) risk.

In the management of dairy cattle it is one of the fundamental principles that the cow should be so fed as to enable her to produce something near the maximum yield of which she is capable. No economy could be more false than to feed a 1000-gallon cow with a 500-gallon ration. Yet to rest content with 365 lb. of live-weight increase in a year, from a beast that is capable of making 730 lb., is essentially the same thing.

As far as concerns the quality of the product, it is true that young cattle yield a proportionately lower dressed carcase-weight than do mature beasts. Also the meat, on account of its higher water content, loses more weight in cooking. Again, there are those who consider that the meat of yearling cattle is "neither beef nor veal," and who are not prepared to exchange the full flavour of mature beef for the tenderness of the young product. So, too, there are people who contend that there is no mutton so good as that of a three-year-old wedder; but these are a diminishing minority. In any case it is undeniable that, weight for weight, the young bullock of 9 or 10 cwt. commands a substantially higher price in the fat market than the mature heavy steer. It is a difficult matter to estimate the amount of this premium which the butcher is prepared to pay for young cattle of "handy" weights, but taking one market and one season with another, it would be safe to say that the difference in value as between 10-cwt. and 13-cwt. cattle, in comparable condition, might be from 5 to 10 shillings per cwt. or, say, from 10 to 20 per cent. This alone may make all the difference between a reasonable profit and a loss.

It would, of course, be useless to contend that all cattle under all circumstances can be profitably reared and fed so as to reach the butcher as baby beef at an age of from twelve to eighteen months. But in many cases this is an economic possibility, and in many others a very considerable speeding up of the rearing process could be profitably carried out.

The cattle of our fat markets, excluding discarded dairy cows and breeding animals, may be grouped, according to their origin and early treatment, in three categories. The first, and smallest, consists of animals with a preponderance of the blood of the improved, early maturing beef breeds, that have been suckled as calves—examples would be pure or high-grade Aberdeen-Angus, or Herefords, or Beef Shorthorns, or crosses of any of these, one with the other. Along with these may be grouped, for practical purposes, suckled calves produced by pure-bred beef bulls from reasonably fleshy dual-purpose cows or heifers, such as crosses of dairy-shorthorn type. These it need hardly be said form ideal material for baby beef production.

The second category are suckled calves produced by cows of the late maturing beef breeds, such as the Galloway and West Highland. If these calves are the gets of a beef Shorthorn bull, they also will form suitable material; but if pure bred they cannot be considered as well adapted for the purpose in question. It is indeed true that these breeds have been greatly improved in respect of early maturity, and it remains to be seen how much farther the process of improvement can be carried without sacrificing the essential quality of hardiness. The immense progress in the direction of early maturity that has been made with the Blackface sheep would seem to indicate that the degree of incompatibility between hardiness and early maturity is less than has usually been supposed.

The third, and largest, group is composed of cattle that have been pail-fed as calves, often with a rather severely restricted allowance of whole milk. These are usually the progeny of cows of dual-purpose type, managed with the primary object of milk or butter production. The calves may be begotten by a bull of the improved beef breeds, or by a bull of the same type as the cows; in any case it must be remembered that beef production in such cases is not the sole end in view. As regards this last class of cattle it used to be considered that baby beef production was not a practical possibility, but recent experiments, both in England and in Ireland, have made it necessary to revise that view.

Turning to the actual methods to be followed in the production of young beef, it must be insisted that the essential point is to eliminate entirely the so-called store period; the calf must make uninterrupted progress from birth up till the time when it reaches the butcher. The more forward the condition of the calf at weaning-time the more necessary it becomes, in order to avoid anything like a set-back in condition, to adopt a liberal system of feeding.

The case of the suckled calf, if its dam has a reasonably good flow of milk, presents no particular difficulty. It must, however, be noted that the matter of milk production is one of prime importance. A cow of quite moderate beef conformation, provided she is bred to a first-rate crossing bull of one of the early maturing beef breeds, and provided also that she is a good nurse, will usually produce an excellent beef calf; on the other hand a cow of the finest beef type, if she is a really poor milker, will rarely produce a profitable commercial calf under any circumstances. If, as often happens, the cow is required to suckle two or three calves a year, a still higher level of milk production must be aimed at.

Where suckled calves are to be reared on arable or partially arable farms, they are usually born in late winter or in early spring. Up till about August, if the cattle are running on fair grass, the calves will make satisfactory progress on milk and grass alone. About this time, however, the grass will begin to decline in feeding value, and the milk yield of the cows will tend to fall off. For this reason, and also because the time for weaning will be drawing near, it is desirable that the calves should receive a small daily ration of concentrate. Linseed cake alone, or a mixture of linseed cake and crushed oats, is very suitable. A beginning may be made with 1 lb. per day, and the allowance should be raised to 3 or 4 lb. at weaning-time.

With calves of this sort the autumn is a critical time, when close attention and careful treatment are necessary in order to avoid a check. The calves should be housed early in October, before the nights get cold. Husk or hoose, which is a common cause of loss of condition, often results from calves being allowed to run out on stale pastures late in the autumn. If clean pasture or young grass seeds are available, a daily run out is beneficial, but otherwise the calves may best be housed permanently from October onwards.

Calves of this type may easily be finished by the spring or early summer, and they should if possible be kept housed for the remainder of their lives. If they are turned out to grass in the spring, when they will be in very forward condition, they make very little further progress for a considerable time. This being so there is no particular object in securing very cool housing conditions, as is necessary in the case of cattle that have to go early to grass. A limited amount of exercise is, however, necessary, because young animals when tied up in byres and heavily fed are very liable to go "off the legs." Covered courts are quite suitable, but partially open courts, if they are moderately sheltered, give equally good results.

As regards the feeding, it is essential that a calf which is growing and fattening simultaneously should receive a different type of ration from that ordinarily used in the fattening of mature steers; the calf requires a ration that contains at once more available energy and more protein, in relation to the bulk or total dry matter, than does the fattening bullock. Thus a diet of roots, oat straw, and undecorticated cotton cake, which gives fair results in the early stages of the fattening of mature stores, must be regarded as quite unsuitable for baby beef production.

Assuming that the weaned calf, in October, is seven or eight months old and weighs about 5 cwt., its food requirements, to enable it to make the full live-weight increase of 2 lb. per day, may be reckoned somewhat as follows:—

The calf will be able to consume, as a rule, a ration containing a quantity of dry matter equivalent to fully 2½ per cent of its live-weight, or about 14 lb. a day. There do exist, of course, considerable differences between individual animals in this respect; some will eat considerably more than the amount indicated, while occasional animals will not eat so much; and of course the long fodder should never be closely restricted.

As regards energy the calf should have about 8 lb of starch equivalent per day, which implies, as the following illustration will show, that the ration as a whole must be of a fairly concentrated kind. The minimum amount of albuminoid for full growth cannot be laid down with accuracy, but probably 1¼ lb. of digestible protein will prove to be ample.

These requirements could be met by a ration like the following :—

	Composition per cent.			In Ration.		
	Dry matter.	Starch equivalent.	Protein equivalent.	Dry matter.	Starch equivalent.	Protein equivalent.
Turnips . . . 35 lb.	9	6	0.5	3.15	2.10	0.17
Clover and Rye-grass Hay . 7 „	84	32	5.0	5.88	2.24	0.35
Crushed Oats . 4 „	86	60	7.5	3.44	2.40	0.30
Linseed Cake . 1¾ „	88	74	25.0	1.54	1.29	0.43
				14.01	8.03	1.25

In case hay is not available, it is possible to construct a ration, using oat straw as fodder, which would correspond with the animal's theoretical requirements, but in such case rather more cake and meal must be fed, and a slightly richer form should be chosen. Thus, for example :—

	Composition per cent.			In Ration.		
	Dry matter.	Starch equivalent.	Protein equivalent	Dry matter	Starch equivalent	Protein equivalent.
Turnips . . . 35 lb.	9	6	0.5	3.15	2.10	0.17
Oat Straw . . 6 „	86	17	1.0	5.16	1.02	0 06
Barley Meal. . 2 „	86	71	6.0	1.72	1.42	0.12
Flaked Maize . 2 „	88	83	8.6	1.76	1.66	0.17
Fish Meal . . ½ „	87	53	48.0	0.43	0.27	0.24
Linseed Cake . 2 „	88	74	25.0	1.76	1.48	0.50
				13.98	7.95	1.26

Where silage is used in place of roots, it must be borne in mind that the quantity of fibre fed will be greater, and hence again a rather heavy ration of cake and meal should be employed. On the other hand, silage is relatively rich in albuminoids, so that the concentrate may have a rather lower protein content. The following is an example of a silage ration :—

	Composition per cent.			In Ration		
	Dry matter	Starch equivalent.	Protein equivalent.	Dry matter.	Starch equivalent.	Protein equivalent.
Silage . . . 15 lb.	27	13	0.20	4.05	1.95	0.30
Ryegrass & Clover Hay . . . 5 „	84	32	5.0	4.20	1.60	0.25
Rice Meal . . 2 „	91	72	7.0	1.82	1.44	0.14
Barley Meal. . 3 „	86	71	6.0	2.58	2.13	0.18
Linseed Cake . 1½ „	88	74	25.0	1.32	1.11	0.37
				13.97	8 23	1.24

Where it is desired to utilise a maximum of home-grown grain it will be found best to buy one of the very highly albuminous cakes, such as soya bean or decorticated earth nut, of which quite a small quantity will be sufficient to balance the ration, as is shown in the following case :—

	Composition per cent			In Ration.		
	Dry matter	Starch equivalent.	Protein equivalent	Dry matter.	Starch equivalent	Protein equivalent
Turnips . . . 35 lb	9	6	0.5	3.15	2.10	0 17
Clover and Ryegrass Hay . 7 „	84	32	5.0	5.88	2 24	0.35
Oats . . . . 2½ „	86	60	7.5	2.15	1.50	0.19
Barley Meal. . 2 „	86	71	6.0	1.72	1.42	0.12
Decorticated Earth Nut Cake . 1 „	90	73	41.0	0.90	0.73	0.41
				13.80	7.99	1.24

In the foregoing cases it is assumed that the various feeding-stuffs are of average composition. Actually in many Scottish districts, notably the East and North-east, turnips have a considerably higher feeding value than is indicated by the average figures; in those districts the desired rate of progress may be secured with perhaps two-thirds of the quantity of cake and meal that are included in the specimen rations.

It is more than possible that calves which are being fed in winter for rapid growth may suffer from a deficiency of minerals. If silage or clovery hay is included in the diet there would appear to be little danger; otherwise it might be desirable to mix, say, 1 per cent of chalk (whiting) and half of 1 per cent of steamed bone-flour in the meal. A salt-lick should also be provided.

As time goes on the ration of roots will, of course, be increased, reaching perhaps 60 lb. of swedes by the latter part of the winter. Also more fodder will be eaten. The concentrate need not be materially increased until the last two months, when it should rise to a maximum of 7 or 8 lb.

The best season to market cattle of this class is probably June or early July. At this season both the general price of beef and the premium for small well-finished animals are usually at their highest. This happens, of course, because the majority of court-fed cattle have been disposed of, while few well-finished grass-fed bullocks are available ; and because small joints are in particular demand by the consumer during the summer season. Moreover, calves born early in the previous spring, that have received intensive treatment, will then have reached about the best market weight of 9½ or 10 cwt.

To carry cattle over from the end of the root season until young grass or other green stuff is ready for cutting is often a matter of some difficulty. A few mangels are very helpful in districts where they can be grown, and, of course, if silage is available the difficulty does not arise. A March top-dressing of sulphate of ammonia applied to a corner of a field of young grass is also helpful by making the grass ready for cutting at the earliest possible date.

It goes without saying that this system of beef production should be adopted only after careful calculation of the cost. To maintain a cow for a full year for the sake of rearing one calf, and thereafter to subject the calf to eight months of intensive house-feeding, makes the finished product rather costly. But if a price of between £30 and £35 can be secured there may yet be a fair margin of profit. The most favourably situated farms are those with an " outrun " of low-rented pasture, where the cows and calves may be cheaply grazed during spring and summer, along with a proportion of good cropping-land for the production of autumn and winter food. The cows may then be economically wintered, mainly on roots and straw, or perhaps silage. Where cheap pastures are not available it is usually necessary, as a matter of economics, to adopt the practice of double or multiple suckling, in which case an outside supply of well-bred calves becomes a necessity.

Compared with the class of animal that has been under consideration, the typical pail-fed calf suffers under two initial disadvantages. On the one hand it is the produce of a dairy cow kept with the primary object of milk rather than of beef production. If the calf is by a good beef sire this may be but a small handicap; but if a milking pedigree has been the sole consideration in the choice of the bull, he is quite likely to throw calves that are lacking in the natural fleshiness which is essential for early feeding. In the second place, where milk is saleable for human consumption at an ordinary price it becomes necessary strictly to economise its use in the rearing of the calf.

The results of two series of experiments which have recently been published[1] have, however, shown that neither of these difficulties is insuperable. In the Hertfordshire Experiments seven calves were used, all out of commercial Dairy Shorthorn cows by a pedigree Dairy Shorthorn bull of good milking ancestry. The calves—five bulls and two heifers—were suckled by their respective dams for four days only, and each received thereafter 25 gallons of whole milk and 55 gallons of separated milk. The former was charged against the calves at the full market price of eighteen pence per gallon. In spite of this severely restricted milk diet, the calves were ultimately fattened and sold to the butcher at an average age of sixty-eight weeks, or, say, sixteen months; the average fat weight was 9¼ cwt., and the average price obtained was £30, 6s., or 65s. 6d. per cwt. Careful cost accounts were kept throughout. Taking the newborn calves at £1 each (which was all that they would have realised in the open market) and making allowance for the value of the manure, the net profit amounted to £7, 7s. 6d. per head. Even if no allowance were made for dung, and if the initial value of the calf were taken at £2, there was still a substantial balance on the right side.

In the Irish Experiment the aim was to compare the returns secured by wintering calves as stores with those obtained by feeding for baby beef. In the first experiment, the calves were crosses by Aberdeen-Angus bulls out of ordinary Dairy-Shorthorn-type cows. The calves had whole milk for the first month, consuming 42 gallons each; thereafter they had separated milk until the age of four or four and a half months. The calves were then divided into two lots, both of which received roots and hay *ad lib.*, while one lot only was fed a ration of equal parts of crushed oats and linseed cake. The average consumption of concentrate was 4 lb. per day throughout a feeding period that lasted from 1st November to 11th June. All the cattle were sold by public auction, at an age of thirteen and a half months, on the latter date, when the stores weighed 495 lb. and the baby beeves 873 lb. The stores brought an average price of £10, 12s. 6d., and the baby beeves an average of £22, 12s. 6d.; a difference of £12 per head. The cost of the oats and linseed cake (at 30s. per quarter and £13, 10s. per ton respectively) amounted to £4, 14s. per head, leaving a net balance in favour of the baby beeves of £7, 6s. per head—a sufficiently remarkable result.

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[1] "Baby Beef Production," by J. Hunter Smith, B.Sc., 'Journal of the Ministry of Agriculture,' XXXII., No. 9, December 1925, and "Report on Baby Beef Experiments, 1922-23 and 1923-24," by G. S. Robertson, D.Sc., and F. Dickinson, Ministry of Agriculture for Northern Ireland, Technical Bulletin No. 1.

In a further experiment, carried out during the following year, the calves were out of deep-milking Dairy-Shorthorn-type cows by a pedigree Dairy Shorthorn bull. The latter's dam had a record of 1422 gallons in forty-five weeks. The treatment was the same as in the previous experiment, except that separated milk was discontinued at the age of three months. Again the calves were divided into two lots, one lot being fed on roots and hay only, while the other had an allowance of oats and linseed cake, which was gradually increased from 3 lb. at the beginning of the winter to 6 lb. at the end. The calves were again sold by public auction at the age of thirteen and a half months, when the stores weighed 538 lb. and brought £13, 10s., while the baby beeves weighed 778 lb. and brought £23, 10s. The cost of the concentrate fed to the baby beeves was £4, 12s. per head, leaving a net balance in their favour of £5, 8s. each.

These results clearly show that baby beef production is a practical alternative to the usual system of rearing pail-fed calves as stores. But there are one or two essential prerequisites for success, which it may be well to note.

In selecting a breeding bull, beef qualities must not be neglected. Among the dual-purpose breeds it is relatively easy to secure a bull of good milking ancestry if no regard is paid to beef points; also it is easy to get a well-fleshed beast if one is indifferent about milk. The combination is much rarer, yet bulls of real dual-purpose type do exist, and can be bought at prices that are not out of proportion to their value as sires of commercial stock.

The other essential measure is to compensate the calf, as far as possible, for the withdrawal of the whole milk. The withdrawal of milk, or the substitution of separated for whole milk, should be done gradually, so as to give the animal time to adapt itself to the change. Moreover, the calf must be induced to eat concentrated food at an early age, and before much reduction is made in the ration of whole milk. Unless a considerable amount of cake or meal is consumed the calf tends, as the milk is reduced, to eat too much hay or grass, and soon assumes the thin-backed pot-bellied appearance that is associated with a too bulky and insufficiently nutritious diet.

As regards the minimum quantity of milk necessary, it may be said that, with skilful treatment, good baby beeves can be reared on about 60 gallons of whole milk; or, if separated milk is available, then on 30 gallons of whole milk with 50 or 60 of separated. The latter is, of course, the cheaper method wherever butter can be marketed at a fair price.

Where whole milk only is used the daily ration, which begins at half a gallon, may be raised gradually to one and a half gallons at the tenth day—more or less according to the size and appetite of the calf. For a further period of three weeks this allowance should be maintained, and at this stage concentrated food should be introduced. Some animals take to it immediately without teaching. A majority quickly acquire the taste if a handful of the meal is mixed with the last of the milk in the bottom of the pail; after a few days they will eat dry food from a trough. Some, however, will refuse to eat the quantity necessary to enable them to maintain themselves in good condition, and in such cases it is best to make a gruel and mix it with the milk. From this point onwards the milk ration is gradually reduced, while the meal is correspondingly increased until at the age of eight or nine weeks weaning is complete.

It is, of course, impossible to produce a perfect milk substitute at a reasonable cost, but, so long as certain general principles are borne in mind, various fairly cheap and satisfactory mixtures can be used for the purpose. In particular, regard must be paid to the total dry matter or bulk; to the energy value; to the protein and ash content; and possibly also to the vitamin content of the substitute used. A gallon of average milk contains the following amounts (in lb.) of the more important constituents:—

Dry matter.	Starch equivalent (Energy value).	Protein.	Lime.	Phosphoric Acid
1.27	1.70	.33	.013	.020

In addition, milk contains a relatively large but variable amount of vitamin A. Whether on this account, or for some other reason, beneficial results are sometimes obtained by feeding quite a small amount of cod-liver oil. Further, the quality of the protein present in ordinary feeding-stuffs is not comparable with that of milk, and an extra amount of protein should be fed. Probably the use of a proportion of animal protein (fish meal, meat meal, or dried blood) will induce better growth.

A suitable substitute for a gallon of milk might be made up somewhat as follows :—

		Dry matter	Starch equivalent.	Protein equivalent.	Lime.	Phosphoric Acid.
Flaked Maize .	1 lb.	0.88	0.83	0.08	.0001	.0063
Linseed Cake .	1 ,,	0.88	0.74	0.25	.0052	.0179
Fish Meal . .	2 oz.	0.11	0.07	0.06	.0131	.0079
Cod-liver Oil .	½ ,,	0.03	0.07	—	—	—
		1.90	1.71	0.39	.0184	.0321

If fish meal is not used, a little chalk and steamed bone-flour will be necessary in order to produce a good mineral balance, and, in any case, a pinch of salt should be added, or a salt-lick provided. As to the quantity, the calf should be allowed as much as it will readily eat, up to about 4 lb. per day.

Where skim milk is available there is much less difficulty about the feeding. It has been often demonstrated that as a butter-fat substitute nothing is better, in relation to its price, than ordinary ground cereals, either oats, barley, or maize. These should be used at the rate of about ¾ lb. per gallon.

In winter, hay and sliced roots should be offered from the age of four weeks ; in summer, the calf may be run on good clean young grass, or may perhaps better be kept inside and fed on cut grass, hay, vetches, cabbage, &c. From the age of six or seven months it may be treated in the same way as is described above for the suckled calf, and may be got ready for the butcher at only a slightly greater age.

THE INFLUENCE ON NUTRITION OF SUNLIGHT AND ARTIFICIALLY PRODUCED ULTRA-VIOLET RAYS.

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It has long been recognised as a commonplace fact that the health of human beings is affected by sunlight, and that the effect is not due merely to the heat of the sun's rays. Experience has shown that a cold sunny climate is better for the health than a hot sunny climate, and that the sunshine on the hills or on the sea coast is more effective in restoring health than that of the valleys. The summer exodus from the towns to the hills and the sea-shore, and the migration, for a period of the dark winter months, by those who can afford it, to the sunshine of the Switzerland hills or the Mediterranean coast, is at bottom an expression of a natural instinct to seek the life-giving rays of the sun—an animal instinct corresponding to, and probably not fundamentally different from, the heliotaxis[1] of plants.

Industrial developments in this country during the nineteenth century tended to deprive people of sunshine. During this period the progress of civilisation, which was due to the invention of mechanical devices rather than to increased wisdom in the art of living, was such that an increasing proportion of both working and leisure time is now spent indoors. Even out-of-doors in industrial areas the smoke cuts off much of the sunshine, and, as we now know, it is specially effective in cutting off the particular rays which are of most value for health. During the period we speak of, although the medical profession continued to recommend sunshine for tuberculous subjects, for convalescents, and for certain other patients, they were so engrossed with the marvellous developments in other branches of medical and surgical science that comparatively little attention was paid to the therapeutic value of sunshine both for restoring and for preserving health. During the past few years, however, an intense interest has developed in heliotherapy, or curing by sunlight. This sudden

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[1] Plants placed in the shadow tend to grow towards the sunlight. This is termed "heliotaxis"—*i.e.*, drawing by the sun.

awakening is largely due to two discoveries. In the first place, it has been shown that the rays in sunlight which have the beneficial effect upon the body are the short invisible rays, which, since they lie beyond the violet end of the spectrum, are termed the ultra-violet. Secondly, by means of special types of electric lamps these rays may be produced artificially in sufficient quantity to have marked beneficial effects. Ultra-violet irradiation by these lamps is now employed regularly in hospitals as the most successful method of treating certain diseases, especially diseases of malnutrition. The use of ultra-violet rays, either from the sun or from an artificial source, has become an important branch of clinical medicine, and a large amount of research work is being done to determine more fully the effects of these rays in health and disease, and the best methods of producing and using them.

Although in the popular press ultra-violet irradiation is associated solely with the treatment of human diseases, especially diseases of children, the value of ultra-violet irradiation is as great for animals as for human beings. Indeed, the experimental work on which our knowledge of the value of artificially produced ultra-violet rays is based has been carried out on animals, in some cases as will be seen presently, on farm animals. The results appear to be directly applicable to those farm animals which are more liable to suffer from malnutrition. Ultra-violet irradiation is, therefore, of as much interest to the stock farmer as to the medical practitioner. As the subject is new in agricultural literature, it will be convenient first to give a short account of the nature of ultra-violet rays and how they can be produced artificially, and then to outline the chief results which have been obtained in experimental work on the effects of irradiation on nutrition. Finally, we will indicate some ways in which the knowledge gained may be applied in connection with farm stock.

THE NATURE AND ARTIFICIAL PRODUCTION OF ULTRA-VIOLET RAYS.

It is well known that the rays of white light from the sun can be broken up, by means, say, of a glass prism, into the "colours of the rainbow" or visible spectrum, as it is termed. These colours differ from each other in that the waves which form their respective rays are of different lengths. Indeed, we find that the colours arranged in order of their wave-lengths are in the order of the spectrum—*i.e.*, red (the longest wave-length), orange, yellow, green, blue, indigo, violet (the shortest). We are aware of the existence of these colours, because the retina of the eye is adapted to respond to their particular rays when they impinge upon it. There are, however, other rays which the eye is not adapted to receive, but to which other parts of the body, particularly the skin, are sensitive. Thus heat rays are essentially of the same nature as light, but the eye cannot see them. Likewise the ultra-violet rays are similar in character to light rays, and indeed merge into them, but they too are invisible. They have the peculiar effect, however, of producing sunburn in the skin. Without entering into any detail, it is convenient to note at this point that the wave-lengths above-mentioned have been measured with great precision. Thus the wave-lengths in the visible spectrum extend from 700μμ at the red end to 400μμ at the violet end.[1] The eye, then, is only adapted to this range from 700 to 400μμ. From this point of view we may say that the heat rays are of too long wave-lengths for the eye to see, for their wave-length is longer than that of the longest red rays. On the other hand, the ultra-violet rays are of too short wave-length to affect the retina, their wave-length being shorter than the shortest violet rays. A diagram will make clear the relationship.

Infra-red or heat rays.
Long wave-length.

Red
Orange
Yellow
Green } Visible spectrum.
Blue
Indigo
Violet

Short wave-length.
Ultra-violet rays.

X-Rays.

Passing to a more particular consideration of the ultra-violet rays, we find that in sunlight they extend from about 400μμ to about 290μμ. Ultra-violet rays of wave-length shorter than this may be produced artificially, but it has not been shown that they are beneficial; they may indeed have irritant properties. Within the range of ultra-violet light, the rays with which we are particularly concerned lie in the region of 300μμ. It has been conclusively shown that these rays exert a beneficial influence in many diseases of malnutrition, notably in rickets.

Ultra-violet light rich in rays of this particular wave-length may be produced by certain types of electric lamps. It is the ease and comparative economy with which this can be done that has brought ultra-violet light treatment so quickly within the range of practical therapeutics. The two main artificial sources employed are the carbon arc lamp and the mercury vapour quartz lamp. It would take us too far afield to describe these lamps in any detail, but, in passing, one or two points may be mentioned. The carbon arc lamp is of the familiar type once largely used for street-lighting purposes. It is comparatively safe in use, since it requires long exposures before an effect is produced. An exposure of one hour at four feet from the lamp may be taken as an example. The mercury vapour quartz lamp, on the other hand, acts more quickly, and accordingly requires a corresponding care in its use. To begin with, a few minutes' exposure is all that can be borne. The effects produced by irradiation with these lamps are similar to those of sunlight. Thus they cause pigmentation or sunburn, which by many is regarded as a protection against overdosage. If used unskilfully they may produce that painful reddening of the skin, known as erythema, and sometimes seen in people who injudiciously expose themselves to strong direct sunshine often under the erroneous impression that they are gaining marked benefit. This illustrates a point which we might here emphasise—namely, that light treatment should begin with short doses and be increased gradually. The great potency of ultra-violet rays does not depend on their penetrative power. Unlike the X-rays, which are of still shorter wave-length, they do not penetrate the tissues, but seem to exert their influence upon the surface. Further, we have already pointed out the difficulty with which ultra-violet light traverses smoke-laden atmospheres. Even ordinary window glass offers a barrier to its progress. It is for this reason that quartz, which is transparent to ultra-violet rays, is used in the construction of mercury vapour lamps.

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[1] μμ applied to a wave-length means a millionth of a millimeter.

EXPERIMENTAL WORK ON INFLUENCE OF SUNSHINE ON NUTRITION.

Though the greater part of our knowledge of the effects of ultra-violet light is derived from experiments on rats in medical schools, and from clinical observations on patients, it is convenient in this paper to illustrate the work, by reference to experiments with farm animals in as far as these are available. In the winter of 1919-20, one of us (J. B. O.) (1) carried out a feeding test with several groups of young pigs kept indoors in badly lit pens, and fed on a badly balanced ration. From the beginning the animals did not thrive, and within two months a number of them were suffering from rickets. In the early spring, on being turned outside and given a varied diet, they all recovered. As there was uncertainty as to what extent the malnutrition had been due to absence of direct light, a further experiment was carried out with three groups of young pigs. One group was confined in dark buildings as before ; a second group was housed in buildings which were warm, well lit, and well ventilated, but which had a north exposure, so that they never received any sunshine ; the third group had a run outside on a brick pavement.

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(1) This and subsequent figures in brackets refer to References at end of article.

The ration in this test was better balanced than in the previous test, so that acute rickets or other signs of gross malnutrition did not develop. There was, however, a distinct difference between the groups. The group with the outside run was more active, and appeared in better condition than the others. Even though the average temperature was several degrees lower, those in the outside run grew more rapidly than those inside in darkness. Thus the average gain in weight of the latter was 101·2 lb., while that of the former was 107·7 lb.

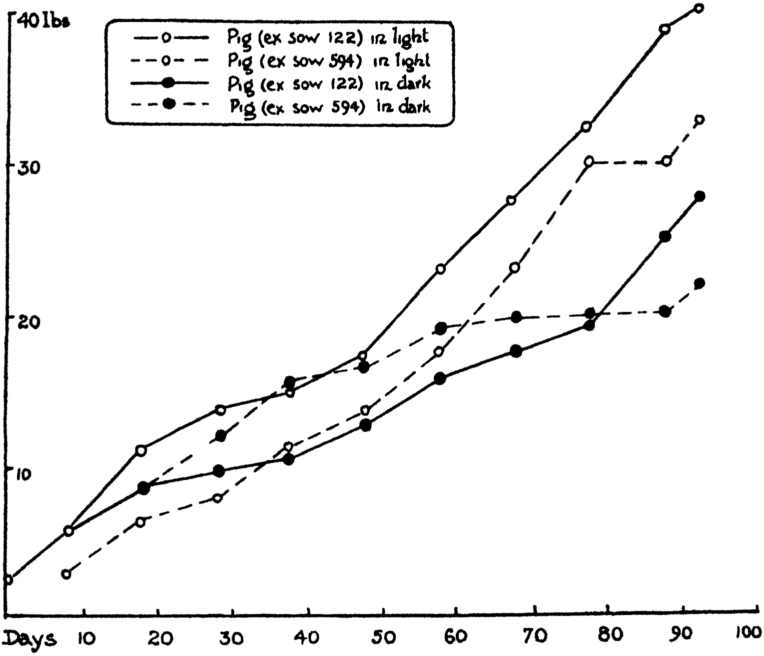
It is interesting to compare with this an experiment conducted at a later date. Two litters of pigs born at the same time were each divided into two equal groups. A group was taken from each litter, and two "mixed litters" were formed. One of these mixed litters was raised in darkness until the weaning stage. The other litter had free access to direct daylight in its pen. The experiment lasted from the middle of July till the beginning of October. The differences in weight between these two mixed litters at the end of the experiment will be seen from the averages in the following table :—

Mixed Litter in Light	Mixed Litter in Darkness
(Ex sow 594) 29 45 lb.	(Ex sow 594) 18 35 lb
(Ex sow 122) 40·70 lb.	(Ex sow 122) 22 37 lb

The growth curves of two representative pigs from each of these litters is shown in the accompanying graph (Fig. 10).

EXPERIMENTS WITH ARTIFICIALLY PRODUCED ULTRA-VIOLET LIGHT.

These tests of the value of sunshine did little more than confirm the observations which have been repeatedly made by both stockmen and medical men, and can hardly be said to have yielded any new information. It is in connection with the artificially produced ultra-violet rays that the real recent advance was made. As early as 1890 Theobald Palm, an English physician, put forward, as a result of his investigations, the theory that rickets was caused by a lack of sunshine. At the time his suggestion fell on deaf ears. We find, however, that by 1903 Bernhard and Rollier on the Continent had established cliniques for the treatment of disease, particularly tuberculosis, by means of sunlight. While their work attracted some attention, it was not till 1919 that artificial ultra-violet light was employed in treatment. In this year Huldschinsky demonstrated that rickets could be cured by its means. The development of the clinical applications of these results was rapid. Further, the investigation of the mode of action of this new therapeutic agent received a great stimulus, both in this country and in America. It was amply proved that the claim that ultra-violet light prevented and even cured rickets was well founded. In this connection the work of Hess, Unger, M'Collum, and others in America, and Hill in this country, is outstanding. These investigations were generally conducted either on human patients or in the laboratory on small animals. Of these, the rat was the most commonly employed, its susceptibility to rickets rendering it a suitable subject for experiment.



GROWTH CURVES OF REPRESENTATIVE PIGS FROM LIGHT & DARKNESS GROUPS

Fig. 10

It is obvious, however, that farm animals also present us with experimental material. One is not always warranted, when discussing problems of animal husbandry, in arguing from the analogy of experiments upon small animals under laboratory conditions. Accordingly, investigations conducted on farm animals, while they may be of great academic interest, have the further advantage that practical application of results can be readily made, and such applications may be of economic importance.

There are two chief lines along which the effects of ultra-violet light have been investigated. One of these is the examination of the changes which it may produce in the blood. The other is an investigation of the alterations which may be induced, as a result of the irradiation, in the rate of assimilation of certain food constituents. On account of the importance, from our point of view, of the latter effect, and on account of the interest of results which might be obtained on farm animals, we set out to determine the effect upon the absorption of lime and phosphorus which ultra-violet light produces. In this investigation (²) we used young pigs of about nine weeks old. We selected the pig, since at the Rowett Institute we had already collected a good deal of data as to its mineral requirements. The result of our experiments was to give point to the findings which we had already obtained. By means of analysis a complete account of the in-go and out-go of calcium and phosphorus in the pig was kept over a period of about fifty days. During part of this time the animal received light treatment from a carbon arc lamp, which irradiated it at a distance of three feet for one hour per day. It was shown that during this period the amount of calcium and of phosphorus which the pig was able to retain in its body was markedly increased. The amount of these substances which it excreted in the fæces was correspondingly diminished. Simultaneously there was a rise in the amounts excreted in the urine. It is noteworthy that these results were obtained upon pigs which were on a diet badly balanced as regards its calcium and phosphorus content. The ratio of calcium to phosphorus was roughly 1:2, whereas in sow's milk, which is presumably the ideally balanced food for the young growing pig, the ratio is 1:1. Hess, Unger, and Pappenheimer had previously shown that the ratio of calcium to phosphorus in the diet is of importance in determining the onset of rickets in rats, and we had demonstrated the importance of this same factor in the case of the pig. (³) The detailed balance experiment bore out, then, the conclusion of our previous trials—namely, that ultra-violet light exerted a markedly beneficial influence upon animals which were on a badly balanced diet. These effects were confirmed when the animals were killed. On analysis the bones of the irradiated pig showed a definitely higher phosphorus and calcium content than did those of the control pig, subjected to similar conditions, but not irradiated. Subsequent experiments with pigs which were on a diet much better balanced as regards its mineral constituents showed that, while ultra-violet light had some influence it was not nearly so marked.

These results obtained with young growing animals suggested the possibility of applying ultra-violet light to lactating animals. In the case of the latter also the requirements for calcium and phosphorus are high, since these substances are secreted in large quantities in the milk. The milk cow during the first half of lactation is generally losing from her body more calcium and phosphorus than she is capable, on an ordinary ration, of absorbing from her food. (4) This means that to provide a large amount of the calcium and phosphorus of her milk she must draw upon the store of these in her skeleton. While this process may be to some extent normal and the natural sequence to the activity in calcium and phosphorus storage which takes place during the dry period, it is obvious, as we will see later, that it may proceed to harmful limits.

[Courtesy of Wm Ramsay, Esq

Fig. 11 —*Goat being irradiated in metabolism cage from which fæces and urine are collected and analysed.*

The amount of minerals which the lactating animal can absorb from the food is determined to some extent by the nature of that food. Thus cows on fresh green pasture have been shown to absorb more calcium than on hay. (5) The general difficulty, however, of increasing absorption has been frequently demonstrated. Some notable work in this connection has been done by Forbes and his co-workers. (4) One, therefore, casts about for any means whereby the process of absorption can be facilitated. That such means is to be found in ultra-violet light seems probable. In a series of balance experiments on lactating goats (6), we have found that the effect of ultra-violet light is substantially the same as in the growing animal—namely, that the amount of calcium and phosphorus which the animal is enabled to absorb from the intestines is definitely increased. In one case when the animal was actually losing more calcium and phosphorus than she was taking in, it was possible to convert this so-called negative balance to a positive one—that is to say, she was able as a result of irradiation to replenish by a small amount her depleted mineral store. The practical significance of these results will be discussed later.

AVERAGE DAILY CaO BALANCES (IN GRAMS) IN 4 EXPERIMENTS.

	Exp. 1	Exp. 2.	Exp. 3.	Exp 4.
Before irradiation	−0·34	−0·57	−0·35	1·90
After irradiation . . .	0·22	−0·28	−0·01	2·35

CaO INTAKE MINUS EXCRETION IN FÆCES. (AVERAGE PER DAY IN GRAMS).

Before irradiation . . .	1·41	−0·04	0·49	4·83
After irradiation . . .	1·89	0·20	1·02	4·98

The above tables show, (1) the increased retention of CaO which followed upon irradiation in each experiment, and (2) the fact that this increased retention was due to a decreased excretion of CaO in the fæces during irradiation.

Having briefly reviewed these experiments on farm animals, it will make for a clearer understanding of what is to follow if we summarise at this point a number of the more relevant effects upon nutrition which ultra-violet light has been proved to have.

1. Ultra-violet light improves in a general way, not easily defined, the condition of animals which are subjected to it. A similar phenomenon is observed in the case of human patients. After even comparatively short treatment, when no objective results may be observable, the patient has a sense of well-being and general fitness. Most of the animals which we have irradiated have responded well, although there have been a few exceptions to which we will have occasion to refer.

2. It has been definitely shown that ultra-violet light increases the resistance of the organism to certain diseases.

Colebrook, Eidinow, and Hill, for example, demonstrated that after irradiation the power of the blood to destroy invading germs was appreciably increased. Sonne of the Finsen Institute has also shown that visible light increases the defence of the body against the toxins of diphtheria. He believes that its effect is slightly to raise the temperature of the blood; thus all the beneficial effects of a fever are obtained without its disadvantages. It may be that these influences play some part in the beneficial effect which irradiation has upon bone tuberculosis, although it is also possible that some more specific mechanism is here at work.

3. Apart from its curative effect in tuberculosis, the most striking influence of ultra-violet light is its prevention and cure of rickets. Rickets, as is well known, is a disease in which, from whatever cause, the metabolism of calcium and phosphorus is upset. There is a failure to deposit these substances normally in the bones. It has been shown, too, that in rickets the blood may be deficient in calcium and phosphorus. In general, it is the phosphorus which is low, while the calcium may be more or less normal. In another type of rickets, however, the calcium may be reduced, and in these there are certain nervous disturbances which are manifested in a particular type of painful spasms. One of the best defined effects of irradiation is to raise the concentration in the blood of the substance which is deficient, whether it be calcium or phosphorus. The mechanism by which this takes place has not been worked out, but it is significant that in the experiments we have already briefly described, ultra-violet light caused an increased absorption of these minerals from the gut.

4. There is an intimate relationship between the problem of rickets and the problem of growth. Consequently it is not surprising to find that ultra-violet light may in certain circumstances enable growth to be maintained for a longer period on an ill-balanced ration than would be otherwise possible. Further, it can prevent or at least delay symptoms of malnutrition in these circumstances.

5. A recently investigated aspect of irradiation is its effect upon food-stuffs. In America, Steenbock and also Hess have shown that if certain food-stuffs be treated with ultra-violet light, the animal which consumes them derives a benefit which is of the same nature as if the animal itself had been irradiated. In other words, the food-stuff acquires the property of inducing absorption and deposition of calcium and of phosphorus. Consideration of these experiments must profoundly alter the conception of vitamins. It is obvious that something with the same properties as the anti-rachitic vitamin has actually been produced outside the body by the irradiation with ultra-violet light of an inert substance. For Steenbock

practically a specific cure in the treatment of rickets in children. There seems no reason why equally good results should not attend its application in the treatment of young pigs. Maynard, Goldberg, and Miller (7) have reported some interesting experiments which bear out our findings as already described. They found that of two groups of young pigs all those not exposed to winter sunshine developed "stiffness," while of the group which had free access to sunlight only one became "stiff." The analysis of the bones also confirmed our findings in the case of the irradiated and the non-irradiated pigs. From such experiments, and from those described at the beginning of this paper, one seems justified in concluding that the fuller utilisation of sunshine for growing pigs would materially decrease the incidence of rickets. Further, it would no doubt increase their general resistance to disease, and would certainly not affect growth adversely.

The question arises: Is natural sunshine sufficient, particularly in the winter months? The answer would seem to be that it is sufficient if the pigs are on a perfectly balanced ration. Until we know, however, a great deal more about nutrition and the ideal ration, it would be wise to avail ourselves of every hour of sunshine. It seems probable that, on the average rations fed to growing pigs, sunshine or its absence are the factors which tilt the scale against rickets or in its favour. Further, the high incidence of rickets in the early spring suggests that such winter sunshine as is obtained is frequently insufficient to stave off the disease. The same is true as regards children. The reason for this marked seasonal incidence of rickets was first pointed out by Hess and Lungaden, who showed that as summer advanced the amount of blood phosphorus of infants rose to a maximum. On the other hand, after the sunless months of winter, it fell to a minimum. At best the number of hours of winter sunshine in our climate is small; and further, winter sunlight is comparatively poor in ultra-violet rays. Within the last year or two certain types of glass, transparent to ultraviolet light, have been put on the market. The installation of these in animal houses would allow of some beneficial rays reaching the interior, but a proportion is kept back, and, as we have already indicated, the ultra-violet intensity in winter is small. These considerations suggest the advisability of employing artificial sources of ultra-violet light, the most convenient being probably the carbon arc lamp. The cost of electricity has, of course, to be considered, but in certain cases the loss from rickets is so great as to warrant the employment of even expensive means for its eradication.

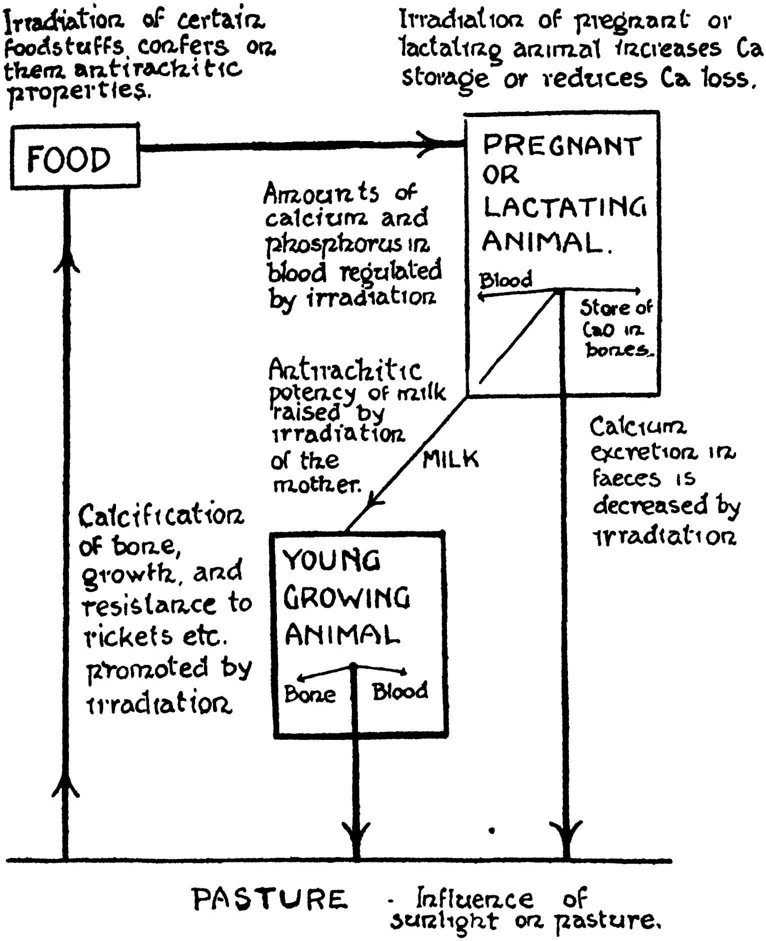
Poultry.—Next to the pig, young chickens probably suffer most from rickets, or at least from the closely related condition of "leg weakness." On account of this susceptibility and on account of their convenience for experimental work, more investigations on the effect of ultra-violet light have been carried out on chickens than on the larger farm animals. Hart, Steenbock, Lepkovsky, and Halpin (8) report investigations from which they concluded that "light can play a very important part in the rearing of baby chicks, acting as a supplement or the equivalent to the antirachitic factor of foodstuffs." One group receiving no sunlight died off in six weeks, the average weight reached being 100 gm. The birds were "listless and inactive, rough of feather, straddling, and awkward in gait." An "all-day sunlight" group was the exact antithesis of this. In eight weeks several of the birds had reached weights averaging 250 gm. It is noteworthy that both groups were receiving small amounts of fresh green clover in their ration (5 per cent calculated on basis of dry weight of the clover). Certain results of Murray and Little (9) also emphasise the benefit to be derived by young chicks from sunlight treatment.

The laying hen requires comparatively large amounts of calcium and phosphorus for egg production. This is obvious when we consider that an egg of, say, 56 gm. weight contains about 3 gm. calcium (as CaO). Some feeding experiments with laying hens which have recently been carried out in a joint investigation by the Scottish Agricultural Colleges, the Department of Agriculture for Northern Ireland, and this Institute (18), emphasise the large mineral requirements of poultry. Halnan (10), too, by means of balance experiments, has demonstrated how active is the mineral metabolism of hens during the laying season. The question naturally arises as to whether ultra-violet light might benefit laying hens. In view of the fact that it increases, as we have seen, the absorption of calcium and phosphorus from the intestine and maintains their equilibrium in the blood, and in view of its prevention of leg-weakness, the probability seems strong that it would be beneficial in the period of active mineral metabolism which accompanies laying. That it actually is so has been proved by the work of Hughes and Payne (11). These workers show, for instance, that ultra-violet light increases (1) egg production, (2) hatchability, (3) percentage calcium in the shell, and (4) percentage calcium in the egg. Hart and his co-workers (12) have lately confirmed these results. They find that a group of hens treated with ultra-violet light continued to lay abundantly, while a corresponding group which was untreated fell off in egg production almost to the zero point. Further, the eggs of hens which were irradiated showed a hatchability which was maintained at 60 to 70 per cent, while in non-irradiated hens the hatchability fell to zero. These are striking results, full of promise from a practical point of view.

Milk cows.—Very little work has been done on the effect of irradiation on the mineral metabolism of lactating animals. To our knowledge the only contributions to the subject have been those of Hart, Steenbock and Elvehjem ([13]), and our own ([6, 19]). In all these experiments lactating goats were used. The results, however, would appear to have a wide applicability, for they are in general agreement, and fall into line with other results obtained with ultra-violet irradiation. The main conclusion is that such irradiation increases the absorption of calcium and phosphorus from the intestine in the lactating animal as well as in the growing animal. This tendency to prevent undue depletion of minerals may be of importance from the following points of view:—

1. During the first half of lactation the milk cow tends to lose more calcium and phosphorus than she can absorb on an ordinary ration. This condition is much exaggerated in heavy milkers ([4]).
2. Forbes and also Hart and their associates believe that forced milk production, with its accompanying mineral drain, leads to a loss of breeding capacity, to sterility, and abortion.
3. Long-continued mineral loss possibly produces an increased susceptibility to disease. We have suggested that there may be a connection between high milk yield and lowered resistance to tuberculosis ([14]).
4. It has been shown by Fingerling ([15]) that reduction of the calcium and phosphorus of the ration eventually causes the milk yield to fall.

From the point of view, therefore, of maintaining breeding capacity, yield, and resistance to disease, the conserving of mineral stores would seem to be important, and we have seen that ultra-violet light treatment is one of our best means to this end. The time when irradiation might with most advantage be carried out is probably the dry period, when there is already a natural tendency to store calcium and phosphorus in view of the coming lactation. We have, however, obtained by irradiation increased mineral absorption in the case of the goat, both during the late stage of pregnancy and during early lactation. It is interesting to note that as regards ultra-violet light, one of us ([16]) wrote in these 'Transactions' in 1924 as follows: "If these rays were proved to have an influence in increasing the assimilation of minerals in heavy-milking cows, it would be a matter of considerable economic importance in the production of milk during the winter months." At this time we had carried out a preliminary experiment which showed that there was no immediate effect upon milk yield following upon irradiation. Now, however, in view of the balance experiments which show increased assimilation in the goat, while it may be too early to suggest definite practical applications, the time has come when tests made under practical conditions are imperative. Accordingly there is a suggestion to instal 20-ampere carbon arc lamps in the byre of the new Duthie Experimental Farm


Irradiation of certain foodstuffs confers on them antirachitic properties.
Irradiation of pregnant or lactating animal increases Ca storage or reduces Ca loss.
FOOD
PREGNANT OR LACTATING ANIMAL.
Blood
Store of CaO in bones.
Amounts of calcium and phosphorus in blood regulated by irradiation
Antirachitic potency of milk raised by irradiation of the mother.
MILK
Calcium excretion in faeces is decreased by irradiation
Calcification of bone, growth, and resistance to rickets etc. promoted by irradiation
YOUNG GROWING ANIMAL
Bone
Blood
PASTURE
· Influence of sunlight on pasture.

INFLUENCE OF ULTRA-VIOLET LIGHT AT VARIOUS POINTS IN CALCIUM CYCLE.

Fig. 12.

at the Rowett Institute. There is every indication that the skilful use of irradiation will have an effect on the health of milk cows in winter.

Apart from the influence upon the health of the cow, there is the possibility of an influence upon the milk itself. Luce (17) has shown that the milk of a cow exposed to sunshine induced in rats, to which it was fed, a greater resistance to rickets than did the milk of the same cow when fed indoors with no access to sunlight. In our work on goats one of us has recently obtained strong suggestions of a slightly raised secretion of calcium in the milk following irradiation.

SUMMARY AND CONCLUSIONS.

The beneficial effect of ultra-violet irradiation in certain conditions of malnutrition and the associated diseases has been conclusively proved, and the clinical application of this remedy in human medicine is already very wide. Farm animals, with their enormous capacity for transforming food which is of little direct use to human beings into products of the highest nutritional value, are particularly prone to diseases of malnutrition. While it must be recognised that against such the first line of defence is an adequate and well-balanced diet, ultra-violet light has been shown to be a most valuable adjuvant.

Its effects are most marked in those conditions in which there is a strain on the calcium and phosphorus metabolism. Examples of such are growth, rickets, pregnancy, lactation, laying. Experiments are described which show the value of irradiation in several of these conditions.

It is suggested that there should be a fuller utilisation of sunshine for farm animals, and the employment of artificial means of irradiation in winter is put forward as worthy of trial (Fig. 12).

The agriculturist should realise that the beneficial influence of sunshine falls not alone upon his crops but upon all farm animals. There is thus in Nature a "calcium cycle," comparable to the better-known "nitrogen cycle." In the latter a seemingly extraneous but all-important factor is the intervention of bacterial action. A corresponding part is played by ultra-violet light in the calcium cycle. In the accompanying diagram we have suggested various points at which irradiation may act.

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WINTER FORAGE CROPS AND THEIR PLACE IN A SCHEME OF CROPPING.

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CAN winter forage crops be grown successfully in the south-west of Scotland, or are the prevailing climatic conditions such as to entirely rule out such a system of cropping?

The question is a very important one. If winter forage crops can be grown there is a real place for them, especially on the dairy farm, for there cannot be any doubt as to the value of a supply of nutritious succulent green forage just before grass comes in late spring or early summer. What a boon to the stock farmer, and what a saving in cost of feeding would follow if such produce were available. Further, if winter forage can be successfully grown, then two crops might be produced in the one year, thereby greatly increasing the productivity and stock-carrying power of the farm.

The experiments reviewed in this article, and which include both summer and winter forage crops, were devised in order to furnish definite information on this subject.

They were carried out in Wigtownshire at Bridgemill, Glenluce, on a 25-acre holding tenanted by Mr George Cowan. At this centre demonstration cropping has been in progress since 1919; numerous manurial and other trials have been carried out; varieties of oats, potatoes, turnips, clovers, and grass-seed mixtures have been tested; and Bridgemill has proved the Mecca of hundreds of interested visitors.

The interest has, if anything, been intensified in the last two years, for in the spring of 1924 three acres in a small field which had been under grass for many years were ploughed up, six half-acre plots were carefully measured off, and on these six different forage crops were put down, namely:—

1. Vetches and rye.
2. Vetches and barley.
3. Vetches and oats.
4. Peas and oats.
5. Beans and oats.
6. Beans.

Since that time the greater part of this 3-acre area has been almost continuously under crop, save for the time that necessarily elapsed between the removal of one crop and the sowing of another. The cropping has therefore been of a very intensive nature.

The six spring-sown forage crops were cut in the end of July and the beginning of August, and no silo being available, the produce, except from the bean sections, was practically all made into hay and stacked for winter food. In this connection some may be interested to know that an attempt to dry part of the green produce by making use of the Sirocco Fan met with only partial success. The test was a very severe one, as green forage of that type is more difficult to dry than the produce commonly made into hay.

All the forage crops gave very heavy yields, and, encouraged by the results obtained, it was resolved to put four of the half-acre plots under different winter forage mixtures, to ascertain if any of these could be relied on to stand the winter, and be sufficiently far advanced to provide a supply of green food for a few weeks in spring before stock could be put out to the grass.

With regard to manuring, as previous experience had demonstrated the value of farmyard manure in the manuring of winter forage, a dressing at the rate of 12 tons per acre was applied in the beginning of September. This was ploughed in, and on the 26th September the following forage mixtures were sown:—

1. Winter rye and winter vetches.
2. Winter barley and winter vetches.
3. Winter oats and winter vetches.
4. Winter wheat and winter vetches.

The rate of seeding in every case was 280 lb. per acre—viz., 140 lb. rye, barley, wheat, or oats, and 140 lb. vetches. The foregoing may be considered a fairly liberal seeding, but, for winter forage, it would seem that it is all required.

The four cereals—rye, barley, oats, and wheat—were included with a view to testing their relative hardiness, earliness, and yield of green forage, as these are important considerations in determining the value of a winter forage crop.

As no seed drill was available, the mixed seed for each plot was sown broadcast, and the efficient and careful manner in which this work was done reflected great credit on the sower.

In addition to the dressing of farmyard manure already referred to, the following dressing per acre of artificials was applied, and harrowed in at the time of seeding:—

2 cwt. superphosphate, 30 per cent.
1 cwt. potash salts, 30 per cent.
½ cwt. sulphate of ammonia.

The winter forage mixtures brairded well, and made fairly good progress until checked by the colder weather. By that time, however, all the crops were pretty well established, the vetch plant being specially prominent.

The winter of 1924-25 was, on the whole, a fairly wet one, but despite that the forage mixtures came through successfully, and though it looked at one time as if they might be a little thin on the ground, they thickened up marvellously, and after a top dressing of nitrate of soda, at the rate of ½ cwt. per acre, on the 10th March, they seemed to make phenomenal progress.

In the beginning of March the green produce would be from four to six inches in height, and at that time the rye-vetch, the oat-vetch, and the wheat-vetch sections looked particularly well, and even then gave promise of good yields ; the barley vetch, though healthy and vigorous, was rather behind the others.

Towards the end of March and during the month of April the rate of growth was very rapid, and the progress made by the rye specially marked, so much so that the rye-vetch mixture was sufficiently far forward for cutting and soiling to commence on 23rd April. From that date the produce of this plot was cut continuously until 14th May, by which time it was all used up.

The green forage was fed to the dairy cows, and was greatly relished by them. There was an immediate response in the way of an increase in milk yield, amounting to 1½ gallons per day or fully 10 gallons per week, from the nine cows that were in milk ; and this increase in yield was maintained over the whole period and right up to the time the animals were put out to pasture.

The amount of green forage fed daily was 32 lb. per cow, 16 lb. being fed in the morning and a similar amount in the evening, and this seemed to have a healthy and stimulating effect on the cattle receiving it.

The yield of green produce per acre when cutting commenced on the 23rd April was just a little over 8 tons. A fortnight later it had risen to over 11 tons, and by the 14th May, when the last of the rye-vetch produce was used up, the yield was over 12 tons per acre. The average yield for the period of three weeks during which the forage was fed was well over 10 tons per acre.

The illustration shows the uncut portion of the crop on the 13th May, and just before the last of the green produce had been used up.

The entire produce of the rye-vetch plot was greedily consumed and quickly cleared up, unless on one or two days at the very end of the period, when, owing to the rye beginning to get rather hard, it was in consequence not so much relished by the stock.

On the basis of a 10-ton crop and allowing 32 lb. per cow daily, 2 acres of rye vetch would provide green forage for a herd of sixty cows for a period of fully three weeks, and just at the very time when the feeding of the dairy herd is both difficult and costly.

By the time the rye-vetch mixture was used up, all of the other forage mixtures were sufficiently far advanced for cutting to have commenced. Any difference in earliness was rather in favour of the barley-vetch mixture, which had made rapid progress, and was, on the whole, a little nearer maturity than the oat-vetch or the wheat-vetch. The difference was not very pronounced, and, as already stated, all of the plots were sufficiently far advanced for cutting to have commenced if that had been necessary when the rye vetch was all used up.

Fig. 13.—*Principal Paterson and Mr Cowan inspecting the Rye-Vetch Crop on 13th May.*

Additional green forage, however, was not required at that time, as by the middle of May grass was becoming very plentiful, and in consequence it was decided not to cut and feed the other forage mixtures in a green state, but to let them grow for a few weeks with a view to making the produce into hay.

The weather during the latter part of May was very wet and quite unsuitable for haymaking, but there was a decided change for the better in the beginning of June. By that time all the mixtures were ready for cutting, and as the barley vetch seemed fully the earliest, a start was made with it on the 9th June. Two days later—namely, on the 11th June—the oat-vetch section was cut, and on the 15th June the wheat vetch, the last of the winter-sown forage mixtures.

Yields per Acre.

The produce was in every case weighed in the green state, so that a comparison as to yield per acre might be made with the rye-vetch mixture, which had all been used as green forage. Some allowance should, however, be made for the fact that the water content would be rather lower in the more mature June-cut mixtures than in the early cut rye-vetch mixture.

The yields per acre for the different mixtures are given below :—

Crop	Date of sowing	Date of cutting	Yield per acre	Utilisation
Rye vetch	Sept. 26.	April 23 to May 14	8 tons, April 23 12 ,, May 14 average, 10 tons	Fed as green forage.
Barley vetch	,,	June 9	14½ tons	Made into hay.
Oat vetch	,,	June 11	20 tons	,,
Wheat vetch	,	June 15	24½ tons	,,

It will be seen from the foregoing figures that while all the mixtures gave, in the green state, very good yields, the wheat-vetch mixture gave an exceptionally heavy yield. This crop was about 4 feet high, and, as will be readily apparent from the illustration, very dense on the ground.

Fortunately, the weather at the time of cutting these forage mixtures was almost ideal for haymaking, and all of the produce was secured in excellent condition.

In addition to weighing the wheat-vetch crop in the green state, it was also weighed when dried, and gave the phenomenal yield of fully 9 tons hay per acre.

In so far as could be judged from appearance, the oat-vetch mixture was fully the best for making into hay, and this view was confirmed later when it was fed to the cattle. Fortunately there was a large proportion of vetches present in all the mixtures, and these seemed to add materially to the quality and palatability of the hay, with the result that, though the barley and wheat components by themselves were not quite so good as the oat, nevertheless, in mixture with vetches, they made very good fodder.

These experiments clearly demonstrated that winter forage crops could be grown successfully under conditions similar to those that prevailed, and that a rye-vetch mixture was likely to be sufficiently far advanced for cutting and feeding green by the last week in April. They also showed that while the other mixtures tried were not ready for cutting quite so early as the rye vetch, they could, nevertheless, be relied on for use from about the middle of May.

Fig. 14.—*Mr Cowan admires the Wheat-Vetch Crop prior to its being cut for hay on 15th June.*

SUBSEQUENT CROPPING ON THE RYE-VETCH SECTION.

As already pointed out, the rye-vetch mixture was all used up by the 14th May, and though there was considerable promise of a second crop, particularly from the vetches, it was thought better, in view of the fact that it was still early in the season, to prepare this section for a crop of swedes. In so doing, a small dressing of farmyard manure was applied on the rye-vetch stubble. This was ploughed in, and the land then worked in preparation for a root crop.

A point worthy of special note is that very little preparatory cultivation was required, as the taking of two forage crops in succession on this section would seem to have left the land in a very nice, clean, friable condition.

Artificial manures were applied at the rate of 5 cwt. per acre, the mixture used being as follows :—

3 cwt. superphosphate, 30 per cent.
2 cwt. ground mineral phosphate, 60 per cent.
2 cwt. potash salts, 30 per cent.
1 cwt. muriate of ammonia, 24½ per cent.

The composition of the compound manure resulting from the mixing of these ingredients is as follows :—

Soluble phosphate, 11.25 per cent.
Insoluble phosphate, 15 per cent.
Potash, 7½ per cent.
Nitrogen, 3 per cent.

The varieties of swedes selected for sowing were: Picton, Knockdon, Scotia, and Green Top. The first two are recognised early-maturing, heavy-cropping varieties, and are specially suitable for early consumption. The other two varieties are also heavy croppers, but they are later in maturing, and prove excellent keepers.

The seed was sown on the 22nd May, and from the first the crop made excellent progress, being thinned in about four weeks from the time of sowing.

The rye-vetch mixture which preceded the swede crop must have had a beneficial effect on the land, for in spite of the fact that the swedes were not sown until late in May, a great yield per acre resulted. This could scarcely be attributed entirely to the system of manuring, as the dressing of manure applied was relatively small, and in all probability the part played by the rye vetch as a catch crop during the winter months also had a very beneficial and far-reaching effect.

The yields per acre for the different varieties, and the average yield over the whole section, are given below :—

Variety of swede.	Date of sowing	Yield per acre		Date of lifting
		Tons	cwt	
Picton . . .	May 22	46	14	Dec. 8, 1925.
Knockdon	,,	44	8	Dec. 14, 1925.
Scotia	,,	45	5	Jan. 6, 1926.
Green Top	,,	40	9	Jan. 11. 1926.
Average yield . .		44	4	

The swedes were not lifted and stored, but were left growing until required for use. The rate of growth was seriously checked by the early winter frost already referred to, but apart from that progress was very steady.

By the time all of the swedes were lifted, winter was too far advanced for another crop to be put in, and this section was accordingly not resown until the spring of 1926.

SUBSEQUENT CROPPING ON THE BARLY-VETCH SECTION.

Though the barley-vetch mixture was cut on the 9th June, some time necessarily elapsed before the crop could be made into hay and cleared off the ground, but as soon as that was done, a dressing of farmyard manure was applied as in the case of the rye-vetch section. The land was then ploughed and worked in preparation for a green crop. A dressing of artificials similar to that for the swede section was applied at the same rate per acre, and on the 26th June this section was sown with Centenary turnips, Marrow Stem kale, and Thousand-headed kale.

The Centenary turnip was selected because out of a large number of early maturing types tested at the College Farm, Kilmarnock, in 1924, it had given fully the largest yield per acre, the average weight of 100 consecutive roots in the drill when "shawn" (topped and tailed) being 487 lb., or almost 5 lb. per turnip, and the yield per acre almost 45 tons.

In spite of the fairly dry summer, and the fact that these crops were not sown until near the end of June, and therefore got a very bad chance, they made, all things considered, fairly good progress.

No additional manure was applied to the Centenary turnips, but on the 19th August the Marrow Stem kale and the Thousand-headed kale were given a top dressing of 1 cwt. nitrate of lime per acre, and, even at that late date, it had a marked effect in pushing on these crops.

The Centenary turnips did particularly well, and, considering the date on which they were sown, gave quite a satisfactory yield.

The time of lifting these crops and the yields per acre are as follows :—

Crop.	Date of sowing	Yield per acre.		Date on which lifting commenced.
		Tons	cwt	
Centenary turnips . .	June 26	21	10	November 11.
Marrow Stem kale				
(spaced 9 inches apart)	"	14	13	December 3.
(spaced 12 inches apart)	"	12	14	December 11.
Thousand-headed kale				
(spaced 12 inches apart)	"	9	5	February 13.
(spaced 18 inches apart)	"	9	0	February 26.

The Thousand-headed kale, because of its greater hardiness, was left to the last, but did not do quite so well on the whole as the Marrow Stem kale, partly because it requires longer to mature; nevertheless, both of these crops provided quite a lot of valuable green forage for use at a time when there is, as a rule, little food of that sort available.

Subsequent Cropping on the Oat-Vetch and Wheat-Vetch Sections.

The sections on which the winter oat-vetch and the winter wheat-vetch mixtures had been sown were, after being ploughed, utilised for the production of summer forage crops, these being the third forage crops in succession on the two sections. The mixtures sown on these two ½-acre plots, and the quantities of seed per acre, were as follows :—

After winter wheat vetch	After winter oat vetch
80 lb. oats.	140 lb. barley
60 lb. rye.	100 lb. vetches.
100 lb. vetches.	24 lb. Italian ryegrass.
24 lb. Italian ryegrass.	

These mixtures were sown on the 27th June. No farmyard manure had been applied as none was available, but a dressing of artificials was again given, this, for the sake of convenience, being the same as that used for the two sections already referred to and put under green crop.

The manure was harrowed in at the time of seeding, and a top dressing of nitrate of lime, at the rate of 1 cwt. per acre, was applied on the 19th August, by which time these forage crops had made considerable progress.

The Italian ryegrass was included in the last two mixtures with the double object of keeping the ground covered in winter after the forage crop had been cut and removed, and giving first-hand information as to how Italian ryegrass compared with rye-vetch, or other winter forage mixture, as regards the production of early green forage.

The rye-oat-vetch-Italian mixture was utilised as green forage, and was fed continuously from the 11th September until 15th October, by which time it was all used up. The yield per acre was 14 tons.

The barley-vetch-Italian mixture was also used in the green state, and was fed from the middle of October until well into November, by which time the Centenary turnips, already referred to, were ready for consumption. The yield per acre from the barley-vetch-Italian mixture worked out at the rate of 17 tons.

After these two forage crops had been utilised, a dressing of farmyard manure was applied to benefit the Italian ryegrass. Apart from the manurial effect, this afforded some measure of protection during the winter, with the result that the Italian started growth much earlier in spring. In the month of February a small dressing of phosphates and potash was applied, and in the beginning of March, nitrate of lime, at the rate of 1 cwt. per acre.

At the time of writing, these Italian ryegrass plots give promise of a big yield, and look as if they would be ready to cut for green forage prior to the end of April, and almost as early as the rye-vetch of the previous season.

This spring crop of Italian ryegrass will really constitute the fourth crop in succession on the same land, and what is still more important is the fact that the four crops have been produced within a period of two years, thereby indicating that *under such a system as that outlined more intensive cropping can be practised.*

CROPPING ON THE OTHER SECTION.

On the other part of the area broken out of old pasture in the early spring of 1924, and which was also under summer forage crop that year, other schemes of forage cropping have been practised, and some interesting results obtained.

This section was not put under winter forage in the autumn of 1924 along with the other two acres, the cropping on which has already been given, but it was left from the time of the removal of the summer forage crop until the following spring before being resown. Three ¼-acre plots were then put under summer forage, and the remainder of the section planted with potatoes.

The forage mixtures used for the three plots were sown on the 20th April, the seeding per acre being as follows :—

1.	2.	3.
Sandy oats . . 120 lb.	Sandy oats . . . 120 lb.	Broad - leaved Essex rape . . . . 6 lb.
Swedish vetches . 60 ,,	Maple peas . . . 120 ,,	Swedish vetches . 120 ,,
Maple peas . . 60 ,,	Westernwolth grass 24 ,,	
Westernwolth grass 24 ,,		

The Westernwolth grass was included in preference to Italian ryegrass because of its greater rapidity of growth; also, in order to ascertain if, after the forage mixture had been cut and removed, it could be relied on to give a second crop in the autumn.

The rape-vetch mixture is one we have frequently tested at Kilmarnock, and for use as green forage in the autumn it is undoubtedly one of the best forage mixtures.

The vetch gets ample support from the stronger rape plant, and, being well carried up and kept well off the ground, there is no waste. Further, instead of the rape suffering in any way from the presence of the vetch, it would almost seem to derive benefit and make all the more vigorous progress when grown in association therewith.

No farmyard manure was applied to any of these crops, as none was available, but at the time of seeding they received a dressing of artificials at the rate of 5 cwt. per acre, and consisting of—

2 cwt. superphosphate, 30 per cent.
1 cwt peerless phosphate, 35 per cent.
1 cwt. potash salts, 30 per cent.
1 cwt. sulphate of ammonia.

All of the crops made vigorous progress, and the rape-vetch in particular attracted a good deal of attention. The particulars as to date of cutting, yield per acre, and utilisation of the produce were as follows :—

Crop.	Time of seeding.	Time of cutting.	Yield per acre in green state.		Utilisation
			Tons.	cwt	
1. Sandy oats, Swedish vetches, maple peas, and Westernwolth grass	April 20	July 15	11	15	Made into hay.
2. Sandy oats, maple peas, and Westernwolth grass	„	„	13	15	„ „
3. Rape and Swedish vetches	„	Aug. 14 to Sept. 5	22	10	Fed direct to dairy cows.

The rape-vetch mixture provided specially valuable green forage, and was greatly relished by the stock. Its introduction into the ration arrested the natural falling-off in milk yield that was taking place at that time, and materially increased the output. All things considered, it proved a particularly useful crop.

When the green produce had all been used up, this section, after receiving a small dressing of farmyard manure, was ploughed in preparation for a winter forage crop, and was ultimately sown on 14th September.

After the other two mixtures had been made into hay and this had been removed, the Westernwolth grass, stimulated with a little artificial manure, came away very rapidly, and when cut towards the end of September and made into hay gave, when weighed out of the cole, a yield of 48 cwt. per acre of hay of excellent quality.

As the Westernwolth grass does not stand the winter, the two plots on which it had been sown were also ploughed for winter forage and sown on 28th September, a fortnight later than the rape-vetch section. The second sowing at an interval of a fortnight should prove of benefit, in that the crop will not all mature at the same time but provide succulent forage over a longer period.

The winter forage mixture sown per acre on these three sections consisted of—

Winter rye, 150 lb.
Winter vetches, 150 lb.
Italian ryegrass, 20 lb.

This mixture is very similar to the one used in the previous year, excepting that the rate of seeding is a little heavier, and that Italian ryegrass has been included so that, after the winter forage crop had been cut, we might have the choice of letting that stand for hay or grazing, if that should appear desirable, or of again ploughing up and putting the section under a root or forage crop.

The artificial manures applied per acre at the time of seeding were as follows:—

2 cwt. superphosphate.
1 cwt. steamed bone flour.
½ cwt. muriate of potash.
½ cwt. sulphate of ammonia.

In spite of the very keen frost which set in early in November and continued throughout the month, the winter forage crop again looks very vigorous and healthy, and, unless adverse weather should now intervene, it gives promise of being ready for cutting quite as early as in the spring of 1925. It would therefore appear as if the rye-vetch mixture could be relied on to stand even a fairly severe winter, and still be sufficiently far on to give a good yield of succulent forage for use prior to the end of April.[1]

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[1] Cutting of the winter forage mixture sown on 14th September commenced on the 21st April, the yield at that time being almost exactly 15 tons per acre, and therefore considerably greater than that obtained in the previous year

The Place for Winter Forage.

With regard to the position that winter forage crops might occupy in a scheme of cropping, it does not seem as if there need be any definite place assigned, for they can be grown successfully at different places in the rotation.

Possibly fully the best place under normal conditions of cropping is between the lea oat crop and the root crop. Unless in a very late season, a section of the stubble can generally be prepared for sowing in September, and the crop can be off the ground in time for a root crop to follow. Taken in such a position the winter forage crop interferes but little with the regular scheme of cropping, especially if an early crop like rye vetch is grown.

Winter forage may also follow summer forage, and be in turn followed by another summer forage crop, and it would appear from our experiment that this system might be successfully practised for a period of years. The adoption of this method of cropping would involve the setting aside of a definite section of land or small field for forage cropping, and like the foregoing would not interfere with the regular rotation.

Though special reference has not been made in this paper to the sowing of winter forage after a root crop, that has also been done with promising results on the section that was under maincrop potatoes, and though, unless in the case of the rye-vetch mixture, the ground is not likely to be cleared in time for an oat crop to follow, another summer forage mixture could be put in, and if it is desired to lay the land down to grass, the grass and clover seeds can be sown with the forage crop. All things considered, there need never be any serious difficulty in finding a suitable place in the rotation for a winter forage crop.

Some Advantages likely to accrue from Winter Forage Crops where they can be Grown.

Winter forage crops provide bulky succulent food at the time it is most required—namely, late spring, when fodder is getting dry and less palatable and when roots are scarce or entirely finished.

To some extent they lessen the dependence on purchased concentrates, while at the same time making it possible to maintain or even increase the output.

They make possible a more intensive system of cropping, and as two crops can be grown in one year the production can be greatly increased.

They increase the stock-carrying power of the farm because of the greater total amount of food produced per acre per annum.

Where winter forage crops are grown stock do not require to be put to pasture so early in the year. This gives the grass a better start, and in consequence it stands more grazing throughout the season. Pastures that are too closely grazed early in the year never carry the same head of stock as those that get a better start.

Winter forage crops constitute excellent catch crops, and in the wetter climate of the south-west of Scotland that is all-important, for the nitrates, instead of being washed out of the land in winter as is the case on bare soils, are utilised in the production of valuable food for stock, hence the fertility of the land is better maintained.

In the wet climate of the south-west of Scotland winter forage crops constitute excellent preparatory crops, provided they are off the ground sufficiently early for the next crop to be fully established before the season is too far advanced.

Conclusion regarding Winter Forage Crops.

As the result of experience gained for the most part at Bridgemill the writer has no hesitation in urging farmers, in favourably situated districts, to give winter forage crops a trial. Select kindly soils in sheltered situations, manure liberally with farmyard manure, sow before the end of September giving a plentiful seeding, stimulate the crop with quick-acting artificials, and, unless the winter proves unduly severe, or the crop is attacked by game or other pests, there will be little doubt as to the ultimate result.

Farming is in anything but a prosperous condition at the present time. New methods must be adopted to meet altered conditions. Winter forage crops will not by themselves save the situation, but, under certain circumstances, they may give material help.

POULTRY ON THE FARM.

By Miss AGNES KINROSS, N.D.D., Holmes Farm, Kilmarnock.

Introduction.

It is to be hoped that the guiding principles and practical information contained in this article will be helpful alike to the general farmer and the smallholder. There is so much foreign competition now that neither the farmer nor the smallholder can afford to neglect any opportunity of gaining knowledge of how to manage poultry successfully.

Almost three-fourths of the supplies of eggs and chickens are produced under the system of mixed farming. This system is the most promising field for increasing supplies.

Eggs can be produced at greater profit by the general farmer than by any other class of poultry-keepers. Poultry-keeping fits in with all systems of farming. In the past the general farmer regarded the poultry on the farm as a necessary evil, and tolerated them as a means of providing a little pocket-money for his women folks. Even in these days there are still farmers who regard them as such, whilst many are realising that poultry-keeping is one of the most profitable branches on the farm, forming a most important side-line. To-day it is one of great importance on the smallholding, constituting a leading feature of the holding. The general farmer might even be considered a poultry specialist and still cultivate part of his farm, as specialisation does not necessarily mean one-crop farming. The best of poultry specialisation is that it makes the best use of land, and secures the best profit per head of the fowls kept.

On mixed farms the cost of food for poultry is comparatively low, and the smaller the number of fowls kept per acre the lower will the food cost be. The ordinary by-products of other branches of farming will go a long way towards keeping a small flock of fowls at low food cost.

Dairying and poultry is a good combination. The by-products of the dairy—separated milk, soured milk, butter-milk, or whey—can be economically utilised for the poultry. There is an excellent first-hand market for the produce—eggs and table chickens,—especially where the produce of the dairy is sold direct to the consumer.

On grain-growing farms poultry may be said to be kept at lowest cost. Apart from the returns in eggs and chickens, the farm is benefited not only by the destruction of weed seeds and injurious insects or pests which poultry remove from the land, but by their manure or excrement which is deposited during their foraging. Their value as destroyers of injurious pests is steadily being recognised, and there is evidence on many farms of the value of their excrement in improving and maintaining the fertility of the land for the growth of crops.

The poultry can be made to fit into the ordinary system of crop rotation in practice in any county of Scotland. There is also great advantage to the poultry themselves under the conditions of mixed farming, the fresh ground obtained by taking advantage of moving the hens, when they form a part of the rotation of crops, being very beneficial to their general health and vigour. There is no over-crowding of the land, and the danger of soil contamination or foul ground is largely obviated, which is one of the difficulties that poultry-keepers have to contend with where fowls are kept on the semi-intensive and intensive systems. It may therefore be safely assumed that the general farmer has means for the maintenance of good health and vigour, and for low cost of production.

In the interests of the poultry industry it is very desirable that development of poultry-keeping on general farms should be encouraged. Examples of profitable poultry-keeping on general farms may be found in any county, but examples where it is conducted on a large methodical scale are not numerous. The general farmer is slow to realise the importance of specialising in poultry-keeping in the same way that he does with his dairy, pigs, and other sections, and of maintaining a flock large enough to place a trained capable person—either man or woman—in charge of it. He does not realise the steadily growing importance of poultry. Many still cling to the old belief that every hen dies in the poorhouse.

In these modern times, when foreign competition is increasing, every farmer ought to foresee the necessity of developing and of making the most of every department. This can only be done by following a planned system of management. Train a member of the family in the work of each department and put him or her in charge. Spend the necessary capital required for equipment—good housing and good stock. Keep accurate accounts of outlays and income. After a fair trial hard facts will convince the farmer that poultry-keeping could be one of the best-paying sections of the farm. Not only will a well-managed poultry section be a good source of income, but it will help to keep large sums of money in circulation within the country that would otherwise be spent on imported products.

There is a steadily growing demand for both eggs and poultry. It will be many years, if ever, before Great Britain can produce them in sufficient quantities to meet her own requirements. With the markets at first hand, grain at first cost, climatic and other conditions favourable, prices for the products likely to be well maintained, poultry-keeping on the farm should be profitable to all who undertake it, and doubly so to those making use of the latest scientific knowledge available.

Quite recently a farmer's wife, who is most successful with her poultry, remarked to me, "It is no use attempting much unless the men folks of the farm are on your side." I suggest that where the women folks are anxious to overcome the prejudice of their men folks, they make a good job with a small number. It is also regrettable that farmers allow their daughters to go to college to be trained in dairying and poultry-keeping and then to take posts where they are in charge of either or both. They do not recognise what the importance of this training would mean to themselves, and rather than allow their daughters to leave home for employment, they should be given every facility within reason, such as good housing, &c., to work with, to encourage them to stay at home and put into practice the valuable training they have received. If the work they do for strangers is to be to the latter's advantage, it would assuredly be of even greater advantage and profit at home, and congenial both to parents and daughters alike.

Whilst egg production is the most important part of poultry-keeping on the farm, where opportunities occur, such as nearness to a good market in the vicinity of a city or industrial centre, other branches will be important adjuncts and should receive attention. These are :—

1. *Production of special Table Chickens of all kinds to suit any particular demand.* (*a*) Milk chickens : These are chickens specially grown to be sold at about 8 weeks old and weighing about 1 lb. each. (*b*) Spring chickens : These are chickens about 12 to 14 weeks old and weighing from 2½ to 3 lb. (*c*) Large roasting chickens from 16 weeks upwards and weighing from 4 lb. upwards. (*d*) Boiling fowls : These are hens coming to the end of their second laying season and which should be got rid of throughout the summer months and before they reach their second adult moult. Culling of these is necessary in order to make room for the incoming pullets. Other fowls, such as pullets that do not look like layers, should be culled out.

No doubt the final preparation and marketing of table poultry would be more successful if conducted on co-operative lines, where they would be fattened and graded before being marketed, rather than by selling direct to the poulterers ; but where the opportunity arises, a private trade may be catered for. Either way, the farmer might with advantage keep a pure breed or first cross, the cockerels of which would be a better marketing proposition than breeds like the Leghorn, Ancona, &c., it being well known that cockerels of these breeds do no more than barely pay for their rearing.

2. *Turkeys.* In localities where the conditions of soil and climate are suitable and genial, a flock of turkeys may be profitably kept. Turkeys are essentially a farm product requiring extensive range for the best results. If all farmers who have favourable conditions for turkey-rearing would undertake a small flock each, they would prevent numerous foreign turkeys being placed on our markets.

3. *Geese.* Like turkeys, geese are also suited to farm conditions. They can be kept on poor pastures, marshy ground, or hill ground. They do with little attention after the first few weeks. They are essentially grazing stock. They would be of immense benefit in improving poor pasture, eating down coarse grasses and thus giving the finer grasses a chance to grow. A seasonable demand might be created by placing them on the market at Michaelmas instead of Christmas. The turkey has largely superseded the goose at Christmas.

4. *Ducks.* Duck-rearing can be undertaken by all classes of poultry-keepers. They do remarkably well under either very confined or semi-intensive conditions, but there is no doubt that *laying ducks* especially are more profitable on farms. Given the opportunity, they will forage extensively, thus reducing the necessity of heavy hand-feeding. Where a market is available for duck eggs, a flock of laying ducks would be profitable in addition to the ordinary poultry. Such breeds as Khaki Campbells, White, Fawn-and-White and Fawn Runners, Orpingtons, &c., may be kept. They should be housed and fed apart from the hens. There are industrial centres where the demand for duck eggs would justify the farmer, so situated, in keeping laying ducks in addition to the ordinary fowls, but only where the conditions are favourable, and where they may have free range. *Table Ducklings:* This branch, in suitable localities, may also be undertaken, Aylesbury ducks being the best breed for the purpose. The ducklings are noted for their rapid growth and size and, with suitable feeding and limited range, are ready to kill at from nine to ten weeks old, and weigh from 4 to 5 lb. each. It is important that they be reared and fed in such a way as to have them ready at the above age, otherwise they cast their duckling plumage, begin to grow adult feathers, and take several weeks longer to be again in condition of flesh. Up to 10 weeks they are profitably grown, but after that quickly eat up the profits. Ayles-

bury ducks are unlike the above-mentioned laying breeds in that their season of laying is comparatively short, extending from the middle of January at earliest until the end of July, when they begin to moult and laying ceases.

5. *Guinea Fowls.* These are in season just after the New Year, and take the place of game or chickens, both of which are extremely scarce at this season. They command a good price.

Any of these branches may be profitably taken up as a side line to ordinary egg production on the farm.

Whilst farmers as a whole are endeavouring to improve their poultry, there is still room for further development in the production of winter eggs, without which the profits for the total year will be very considerably lowered.

The various items requiring attention are:—

1. The best breeds for the general farmer.
2. Provision for the annual renewal of stock.
3. Hatching the eggs.
4. Rearing of the chickens.
5. Housing of adult stock.
6. Feeding of laying and breeding stock.
7. General information.

1. *The Best Breeds for the General Farmer.*

In order to reduce the cost of production, it is important that the productive quality of the fowls should be increased. To accomplish this, the breed or breeds which the farmer proposes to keep should be suited to conditions of climate, locality, and soil.

It is better to keep to one or, at most, two breeds. When the number is increased their management becomes more complicated: it is impossible to concentrate on flock improvement: the difficulty of keeping each breed by itself is greater: production is lower: the cost of labour is higher; all of which is reflected in the returns.

For some time past the *White Leghorn* (Fig. 15) has been greatly in favour as a farm fowl, partly no doubt due to its non-broodiness, which saves considerable time in removing hens to and from the broody coop, but also because of its wide-spread popularity as a layer. Whilst it is an excellent egg producer, it has a few faults: (*a*) the cockerels do not pay for their keep in rearing them to a marketable age; at their best they are poor table chickens. (*b*) At the present time a number of the strains lay smallish eggs—*i.e.*, under two ounces—for a period after they start laying. (*c*) Unless it is very suitably housed and fed, it is more susceptible to climatic changes than some of the other breeds—*i.e.*, egg production may go down. (*d*) After the first adult moult, which takes place at the end of the pullet year, it takes a long time to come into productivity again—in fact, it rarely lays from October or November until the end of the following February. It is, therefore, being kept at the expense of other producing fowls. If a 50 per cent flock is being carried over into the second laying season, they are simply spring and summer producers. The eggs fetch the reduced prices prevailing at that season excepting those required for hatching purposes. (*e*) When the Leghorn is kept, only a sufficient number—about one-third of the total stock—should be carried over into the second season as breeders, the balance, or two-thirds, being pullets, so that the production will be greater in the autumn and early winter months, the season of scarcity and higher prices. These remarks apply even more particularly to the black than to the white variety of Leghorn.

One of the general purpose or heavy breeds might be kept along with the Leghorn. One of the following may be chosen —White Wyandotte, Rhode Island Red, Light Sussex, Barred Rocks, Buff Rocks. These breeds have been well tested for their merits as egg producers. They are excellent autumn and winter layers. With the exception of some strains of White Wyandottes, their eggs are very soon of good marketable size or first grade—*i.e.*, two ounces. All breeders of the Wyandotte should be most careful in the selection of stock for the breeding-pen, taking special note of the pullets that are laying good-sized eggs, retaining them as breeders for the following spring; also by keeping hens of good type and size, improvement in the size of egg will follow.

The *Wyandotte* (Fig. 16) is one of the best heavy breeds. (*a*) It is well suited to varying conditions. (*b*) It matures very quickly, especially on medium and lighter classes of soils. (*c*) The cockerels are very plump at 14 to 16 weeks, weighing from 3 to 3½ lb. without any special feeding, fetching a good price per lb. for table purposes. (*d*) With the exception of the small egg of certain strains it is an excellent farm breed. (*e*) It is only slightly broody in early spring and summer.

Rhode Island Red (Fig. 17). (*a*) In general it lays a very good egg, both for size and colour. (*b*) It is rather broody in spring and summer. (*c*) The cockerels have larger frames than Wyandotte cockerels, characterised by longer keels. They are not so plump or well fleshed at 14 to 16 weeks. This could be greatly improved by curtailed exercise and special fattening food from 12 to 16 weeks. (*d*) It does not mature so early as the Wyandotte, taking two or three weeks longer to start laying. (*e*) Well suited to stand varying conditions.

Light Sussex (Fig. 18). (*a*) It is better suited to conditions where the climate is fairly dry and not too cold. (*b*) To the lighter and more kindly soils than to damp heavy soils. (*c*) The cockerels mature quickly under suitable conditions. They are plump and well fleshed at 14 to 16 weeks, and having white flesh and skin, they are specially fine for table purposes. (*d*) It is only within recent years that it has been developed along egg-producing lines. The majority of the strains are not equal to the Rhode Island Red or Wyandotte as layers. (*e*) The eggs are very good size and colour.

Barred Rock (Fig. 19). (*a*) It is not so well known or popular as it might be. It is the most largely kept breed on the general farms in Canada and the United States. It might be more extensively kept in Scotland, being well suited to free range. (*b*) It is an excellent layer in autumn and winter. (*c*) It has a large frame—*i.e.*, heavy boned and consequently slow in growth and taking longer to start laying. (*d*) The chickens should be hatched as early in March as possible so that the pullets will start to lay in the early autumn. (*e*) The cockerels are well fleshed at 14 to 16 weeks, and practically ready for sale without any special feeding. (*f*) It lays eggs of good size and colour.

Buff Rock (Fig. 20). (*a*) A very good layer in autumn and winter. (*b*) The egg is of good size and colour. (*c*) It matures rather earlier than the barred variety. (*d*) Like the Rhode Island Red, the cockerels are not so plump or fleshy at 14 to 16 weeks, and would be improved by being specially fed for a week or two previous to selling them.

Any one of the above-mentioned breeds is suitable for the general farmer, along with the Leghorn, where two breeds are kept.

A necessary addition to the housing of heavy breeds is a broody coop of a suitable size for use with each flock. Whenever a hen shows signs of sitting she should at once be put into the coop; by doing so she will be broken off the sitting habit and in two or three days may be returned to the house. She will start laying again within 10 to 14 days. The removal of "broodies" will only occupy the time of the attendant for a few minutes when collecting the eggs in the evening or, later, when the house is being locked-up.

Whilst in the coop "broodies" should receive the same food and water as when laying, and should not be starved, as so many poultry-keepers believe.

There are several newer breeds and varieties—Barnevelder, Australorp, &c. The general farmer should be thoroughly convinced of their merits and suitability before taking them up in preference to the above-mentioned breeds.

First Crosses. Instead of pure breeds there are several good crosses that might be kept. For laying purposes a cross between a light and heavy breed is preferable, the cockerel being the light breed. To cross two heavy breeds does not improve any particular point, such as egg-laying, nor does it decrease broodiness. The following crosses are all good—White Leghorn x White Wyandotte, Brown Leghorn x Buff Rock or Buff Orpington, Houdan x Buff Orpington. These are all well known to be good layers. Excepting the first mentioned, the cockerels do not have such a nice appearance for table purposes. There are also one or two very excellent sex-linked crosses which may be kept by farmers who have not a good outlet for cockerels. As the sexes are easily distinguished when hatched, the cockerels may be destroyed, thus rearing the pullet chickens only.

1. *Brown Leghorn* x *Light Sussex* (Fig. 21). (*a*) The "down" of the pullet chicken is pale buff in colour; (*b*) that of the cockerel is white, with or without little specks of black.

2. *Black Leghorn* x *Barred Rock* (Fig. 22). (*a*) The "down" of the pullet chicken is similar in appearance to that of any other black chicken—viz., black on the back with white under body; (*b*) that of the cockerel chicken is the same (black not so pronounced), but showing a small greyish-white spot on the back of the head. In both crosses the female progeny take after the male parent, and the male progeny take after the female parent. The pullets of both crosses mature quickly. They are very good layers and rarely become broody. The cockerels may be reared and separated at an early age from the pullets, and given different treatment as regards getting them ready for table. They can be in excellent condition for selling at 12 to 14 weeks—an age to which they may be profitably kept. It is clear therefore that the farmer has a choice of excellent, well known, pure breeds and first crosses, and that there is no need to take up other breeds whose merits are still doubtful.

2. *Provision for the Annual Renewal of Stock.*

According to the size of the flock, there are various ways in which from a half to two-thirds may be renewed each year :—

(1) *A Breeding Pen to produce a sufficient number of Hatchable Eggs at the right time.* (*a*) If the flock consists of a heavy breed, the eggs will be required for hatching from the middle of February to the end of the first week in March. (*b*) The date of starting the incubator may be any time from the middle of February to the end of the first week in March for heavy breeds, and from the middle of March to the end of the first week in April for light breeds. When a first cross is preferred, it is necessary to have a breeding pen of pure-bred hens in order to provide for the first cross, as cross-bred hens cannot be used as breeders. Chickens which are hatched out earlier or later than above dates are more difficult to rear—January and February chickens requiring great care and attention to guard against chills, which are inevitably followed by leg

weakness which will lead to a high death-rate. Leg weakness may develop when they are confined to the brooder too long. Late hatched chickens (May and June) are slower in growth, and are also more difficult to manage than those hatched out in March and April—the natural hatching season of spring-time. (c) To simplify hatching and rearing operations, the incubator capacity should be large enough to have all eggs hatched out in two lots. (d) If fifty pullets are required for renewal purposes, 200 hatchable eggs will be wanted, allowing four eggs to provide one good pullet. (e) In order to get this number of well-selected eggs collected within fourteen days, from 30 to 40 breeding hens should be kept. (f) One incubator of 100-egg capacity will be required. For large numbers of pullets relatively more hens will be necessary, with increased incubating capacity.

Care of the Breeding Stock. In order to have satisfactory incubation, the breeding stock should have attention. (a) At the end of their laying season—*i.e.*, the end of their pullet year, select the hens which are to be retained as breeders, removing the surplus hens to another house to finish their laying period, when they can be suitably disposed of before they start moulting. (b) The future breeding stock should be fed in the usual way, allowing them to come through the moult naturally and without forcing. (c) Before the end of November, when the moult will be over and they are still in the resting period, remove them to fresh ground. There is nothing to beat the portable housing system for breeding stock. The benefits of fresh ground and natural conditions improve the fertility and hatchability of eggs. (d) Grain-feeding morning and evening will maintain them in good health during November and December. (e) From 1st January they should have different feeding in order to get them started laying as soon as possible. In the morning give them well prepared wet mash—¾ to 1 ounce per hen. Let them out in the morning as early as possible. Encourage them to roam over the pasture by scattering a handful or two of grain away from the house. In the evening give them from 1½ to 2 ounces grain per hen. This will be sufficient feeding when they can be out-of-doors, but should the weather be severe a little extra grain may be necessary at mid-day. They should never be without water or milk to drink. Better fertility is got when more grain than mash is fed, and by encouraging outdoor exercise when the weather permits. Breeding hens on farms should not be encouraged to stay inside the house with dry mash or hopper feeding. Their housing and food mixtures will be dealt with elsewhere. (f) Two-thirds of the total flock should be pullets and one-third hens beginning their second laying season. These latter will be the breeding stock. (*g*) When a flock of one hundred hens is kept, from 60 to 70 should be pullets and the balance two years old. (*h*) Winter eggs are mainly produced by the pullets. The yearling hens begin to moult in September and October, they are non-producing during November and December, and are only again starting to lay in January, when their eggs will be required for hatching.

(2) *The Second Method of renewing Stock.* Instead of mating up breeding stock, day-old chicks may be bought in. (*a*) It is important to get them from a reliable breeder whose stock is known to be perfectly healthy, and who has not had any disease amongst his chickens, such as bacillary white diarrhœa, &c. (*b*) It is unnecessary to buy the most expensive chickens; rather have them from stock that have put up a good average yearly record. (*c*) The brooders or foster-mothers should be in readiness to receive the chickens on arrival. (*d*) Warmth is the first necessity rather than food. (*e*) The trouble of hatching the eggs is obviated. (*f*) To make certain of the number of pullets, double the number of day-olds should be bought, assuming that it takes two chickens to produce one pullet.

(3) *The Third Method of renewing Stock.* Instead of mating breeding hens or buying day-olds, the farmer may buy pullets up to ten or twelve weeks old. This is a very good method if the farmer is handicapped in having no suitable person to look after the hatching and rearing. It is a profitable way of renewing stock. If adopted, the order for the pullets should be placed in the spring in order to be certain of getting them all from the one source and of the same age.

By whichever method the stock is to be renewed, the main point is to have the pullets hatched at the right time, and each kind to be uniform in age. In this way there is a greater prospect of good egg production during the following autumn and winter. The difference in the cost of renewal by any of these methods will be infinitesimal.

Mating of the Breeding Hens.

(*a*) 15 to 20 hens of the light breeds are mated to 1 cockerel.
12 to 15 hens of the heavy breeds are mated to 1 cockerel.
30 to 36 hens of the light breeds are mated to 2 cockerels.
20 to 24 hens of the heavy breeds are mated to 2 cockerels.

Larger numbers of hens are mated proportionately. (*b*) The pen should be mated in December. (*c*) Where more than one cockerel is mated with one flock, they should have been reared together, as there will be less chance of their fighting.

(d) Each pen should be far enough apart to keep the cockerels with their own flock. Fighting is harmful to fertility, and should be, if possible, prevented. (*e*) In order to keep the cockerels in good health and condition during the breeding season, they may require separate feeding from the hens at least once a day.

3. *Hatching the Eggs.*

(1) *The Care of the Eggs previous to Hatching.* (*a*) In the early part of the season it is advisable to lift the eggs from the nests twice daily in order that they may not be exposed to low temperatures. (*b*) Use plenty of clean fresh straw in the nests for warmth and to keep the eggs clean. It is preferable that hatching eggs should not be washed unless it is absolutely necessary. (*c*) At the end of each day, select all the suitable eggs—*i.e.*, for size, shape, and texture of shells. Place them in a box, covering them over with bran or sawdust, with flannel or thick paper above, in order that they are not exposed to a current of air or low temperature. The room in which they are stored should be about 50° F. When they are being kept for longer than seven days, they should be turned occasionally. The shorter the period they are kept the better, as the membrane (vitteline) enclosing the yolk is weakened with age. Handling whilst putting them into the incubator and daily turning during the incubating period, unless very carefully done, will cause this membrane to break, hence a broken yolk.

(2) *Management of the Incubator.* All of the well-known incubators may be relied upon to hatch eggs successfully if all the factors in the management of the breeding stock and eggs are attended to. The important points are: (*a*) The incubator should not stand in a draught. (*b*) The incubating temperature should be one degree higher than that given in the working instructions, particularly in the earlier hatches of the season. The climatic conditions of Scotland are different from that of England. (*c*) Turn the eggs twice daily, beginning on the third morning and continuing until the morning of the nineteenth day. (*d*) Cool the eggs after the first test (eighth day), the length of time varying with the atmospheric temperature of the room. (*e*) Provide more humidity in a hot-air incubator than that recommended. It is necessary from the beginning of the hatch, and more so during the cold weather period than during warm weather. Where the outside temperature is low, the rate of air circulation within the incubator is more rapid, tending to remove too much water from within the egg. This humidity may be provided by the use of a sand tray placed in the chicken nursery under the egg tray. A galvanised tray, 18 inches square and 1 inch in depth, is required for incubators of 100 to 150 egg

capacity; put in clean fine sand ½ an inch deep. Sprinkle the sand with lukewarm water (80° F.) each morning, or whenever it appears necessary. The sand should just be damp, not saturated. The sand-tray is taken out on the nineteenth day, at the time of the last turning and cooling, saturated with water, and placed on the floor beneath the incubator. In addition, the moisture device of the different hot-air incubators is used throughout the period and during the final hatching from the nineteenth to twenty-first day, or until the hatch is completed. The additional humidity prevents toughening of the shell membranes and excessive evaporation of the water of the egg. A heavier chick is hatched, and the percentage of dead in shell is reduced. (*f*) The incubator door should not be opened from the nineteenth to the end of the twenty-first day, or until the hatch is likely to be over, otherwise the humidity in the incubating chamber which is so necessary for successful hatching is lost, owing to the inrush of cold air and the lowered temperature. This is often the cause of chicks dying in the shell and after the cracking of the shell has begun. (*g*) After completion of the hatch, the chickens should remain in the incubator nursery until the evening of the twenty-second day, when they will all be at least thirty-six hours old. (*h*) Before refilling with a fresh lot of eggs, the incubator should be thoroughly cleaned, washed, and disinfected, and a fresh adjustment of the regulating apparatus made.

4. *Rearing the Chickens.*

When the chickens are hatched at home, or day-olds bought in, a system of rearing is necessary. The following methods are suitable for the general farmer: (*a*) Ordinary portable rearers of a well-known pattern. These are sold by the makers with a capacity for 100 or 150 chicks, but it is unwise to put more than 72 and 100 in each respectively; even a smaller number will give better results. Either size will be required to take the chicks from incubators of the above capacity. As the second batch of chicks will be due a month later, it will be necessary to move on the first lot. They are not old enough to do without heat. A hover is very suitable, placed in a portable hen-house. It will carry them over until they can do without heat, or for the hover may be substituted an ordinary storm-lamp. Perches should be put in before the hover is taken away, in order that they may become accustomed to perching, thus reducing the risk of loss by crowding together and smothering after the heat is dispensed with. Chickens get an excellent start in portable rearers, but when they are moved into a house with a hover they develop rapidly, owing to more floor and overhead space, and the better admittance of fresh air, which is beneficial. After the cockerels are separated out, the pullets may remain in the same house until they are ready to go into the laying-house, which they will occupy in the following year. Instead of using portable rearers, small chicken houses and hovers may be used from the start, the same temperature being given as with rearers. During cold weather the rearer may be placed inside a shed or any other spare building during the first fortnight, or until the chickens are allowed on to a grass run. This lessens the risk of chill. (*b*) The *brooding temperature* for the first fortnight is 90° to 95° F. in the heated compartment, and 80° to 85° F. for the second fortnight. Until the brooding stage is over at 8 to 10 weeks, gradually lower the temperature each week. Sufficient warmth is important in the early stages of rearing. If chickens are chilled they contract diarrhœa, which, if not checked, will result in stunted growth and mortality. (*c*) *Clean Ground:* Even on the general farms, the importance of fresh rearing ground is often overlooked. With every advantage of fresh ground better grown pullets should result. The farmer very often fails to realise its importance. He can, as a rule, bring off excellent hatches, but very often he does not make a good job of rearing the chickens. For convenience in looking after the young chickens it is an advantage to have them near the house, but as soon as they are large enough to do without constant overlooking they should be put farther away on fresh ground, when they will develop into strong vigorous pullets.

There are certain arguments in favour of rearing one's own pullets. With the immense advantage of fresh ground, better grown pullets should result. Hatching from home-breeding stock makes it possible to follow out a definite line of breeding, and thus increases the possibility of securing hardier pullets as regards health, egg production, and quality of eggs.

(*d*) *Separating the sexes:* This should take place with light breeds at 8 to 10 weeks old, and if possible earlier—10 to 12 weeks for heavy breeds. Feed the growing cockerels heavily in order to get rid of them at an early age. Remember that after a time they eat up any profit they are likely to make. The demand is for chickens not less than 2½ to 3 lb. On the other hand, it is unprofitable to keep them until they weigh 4 to 5 lb. (*e*) *Keep the growing pullets from different hatches apart:* This applies throughout the whole rearing period. The older chickens keep the younger ones from the food. (*f*) Starting with 100 chickens, and after allowing for *normal mortality*, there should be left, after separation of the sexes, a probable 50 to 60 pullets, or approximately 50 per cent. This result is not got without proper care and management, especially during the early rearing stages, when the greater losses occur. (*g*) *Summer Management of growing Pullets:* It

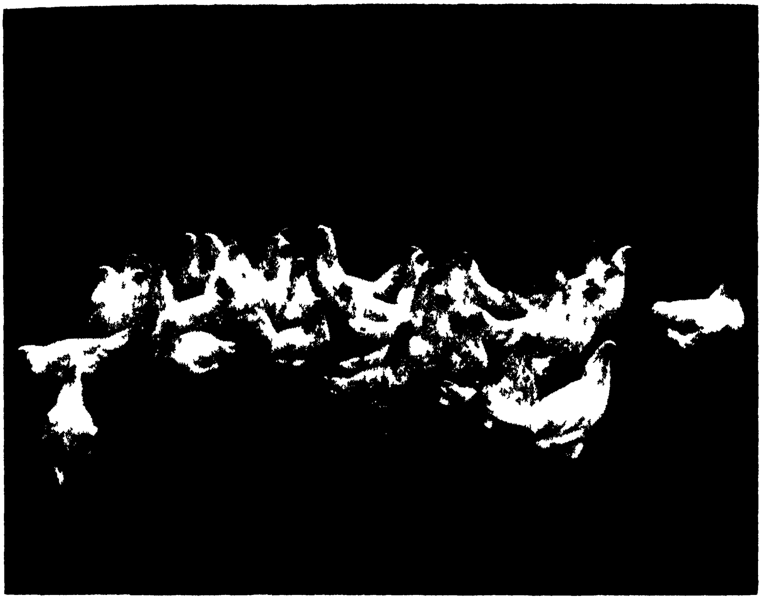


FIG. 15.—White Leghorn Pullets.

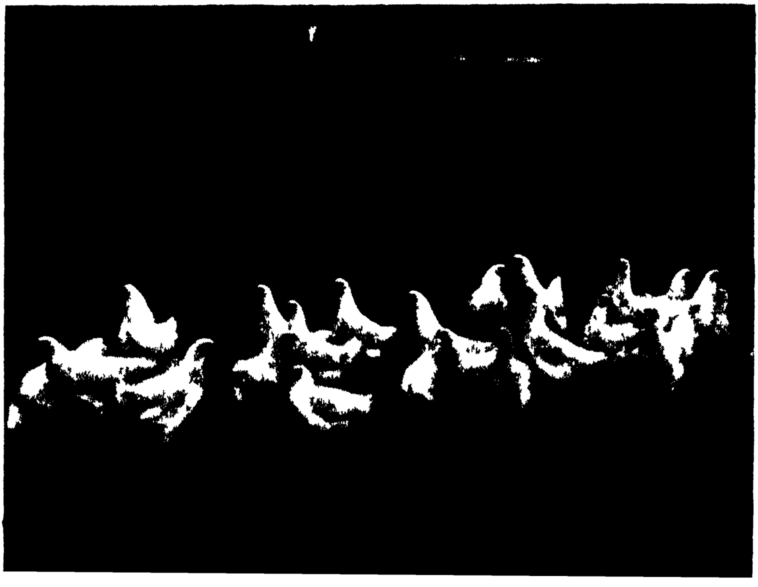


FIG. 16.—White Wyandotte Pullets.

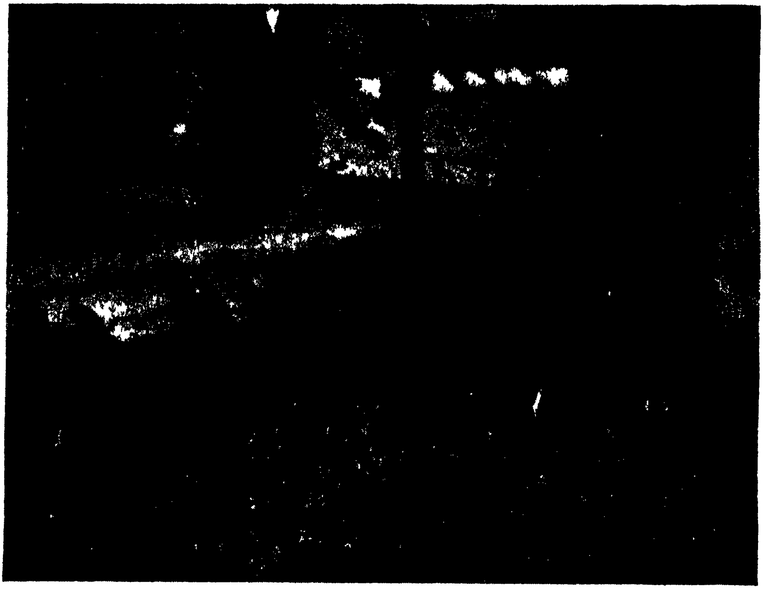


FIG. 17 —Rhode Island Red Pullets

FIG 18 —Light Sussex Pullets

FIG. 19.—Barred Rock Pullets

FIG. 20.—Buff Rock Pullets.

FIG. 21.—Brown Leghorn × Light Sussex Pullets.

FIG. 22.—Black Leghorn × Barred Rock Pullets.

is a mistake to adopt the dry mash or hopper system of feeding on the general farm. It discourages foraging by keeping the chickens at the mash hoppers inside the house, thus reducing the benefits of free range. At the end of summer or by September, when the pullets are almost matured, all those of uniform size may be placed in their winter laying-house or, on arable farms, they may be moved on to stubbles. They will require no hand feeding. They will find large quantities of fallen grain, grubs, &c., which will keep them going for some weeks. No other method of treatment is so beneficial. They will require fresh water daily, and only a little soft mash in the late afternoon if it is found that their crops are not entirely filled. They may remain on the stubbles until ploughing is likely to start, when they can be moved into the grass field. On the arable farm the poultry may form part of the rotation. It will be found that the field occupied by the hens will greatly benefit as regards the future crop by reason of the manurial value of their excrement. They are excellent land improvers, removing injurious grubs, &c., and weed seeds. When they are placed in the laying-house, on pasture, begin to give them the laying ration that is to be used during the winter. (*h*) *Cleanliness:* Throughout the whole rearing stage, cleanliness of rearers, houses, feeding and drinking dishes, is important. (1) Clean out houses frequently, putting in fresh litter. (2) Mouldy or fusty litter and grains and meals should be avoided. It may cause a disease called "Brooder Pneumonia," which is due to a fungus or mould. (3) Frequent disinfecting of the interior will keep down lice and red mite. (4) Open the windows or ventilators as required to admit a sufficiency of fresh air day and night. Growing pullets should not pass the summer nights in an overcrowded and badly ventilated house. They do not develop properly. It is, along with dirty ground, the cause of an anæmic condition. They are likely to get intestinal worms on dirty ground. (5) If there is a predisposition to any disease, lack of fresh air and overcrowding would most certainly contribute to its development. (6) Face the house so that the front and the chicken exit will be sheltered from wind and rain. There should be no danger of colds, &c., developing if the pullets are housed in the manner outlined. (*i*) *Chicken diseases:* Higher productivity, more stimulating food, and more intensive conditions have had a slightly deteriorating effect on the constitution of one or two of the popular breeds, which partly accounts for the increased infertility of hatching eggs, dead in shell, and death-rate in rearing the chickens. Outbreaks of ordinary diarrhœa, the result of chill, and gapes have always occurred from time to time. Diseases such as bacillary white diarrhœa, coccidiosis, &c., were practically unknown a few years ago, and might still remain unknown on the general farm if the farmer makes certain: (1) That he is buying hatching eggs, day-olds, or stock cockerels from a poultry-breeder who has had none of these diseases. (2) That his own breeding and laying stock and chickens are kept under natural conditions—*i.e.*, periodic changes to fresh ground, good housing, good feeding, and the ordinary rules of cleanliness and sanitation observed.

Gapes can be prevented by having two rearing grounds, to be used in alternate years. Even then gapes might appear, a common contributing cause being the frosty east winds that are occasionally prevalent in March, April, and May. A roomy rearing-house helps. The chickens may be kept indoors when the outside conditions are unfavourable; at other times, allowing them out only after the heavy morning dew has lifted, keeping a sprinkling of fresh lime shell on the floor beneath the litter, using an antiseptic in the drinking water or giving soured milk, will lessen the risk of an outbreak. One is apt to forget that the change to summer-time makes the morning hour much colder, and increases the difficulty of rearing. Bearing this fact in mind, the chickens should not be allowed out so early, but the time lost in the morning is regained by the longer evening light.

Ordinary diarrhœa, brought about by a chill through low temperature in the rearer, or by feeding, may be checked by attention to these points. Added to a pint of water or milk, 10 drops of sweet spirits of nitre, given in the morning before feeding for a week or so, will generally stop the diarrhœa.

More serious diseases. Should there be an outbreak of a more serious and contagious nature, such as bacillary white diarrhœa, coccidiosis, or brooder pneumonia, no time should be lost in seeking expert advice from any of the Agricultural Colleges.

Bacillary white diarrhœa appears almost as soon as hatching is over—*i.e.*, within the first week. It is characterised by a droopy condition and a rapid and high death-rate of the chickens.

Coccidiosis appears when the chickens are from 4 to 8 weeks of age, generally at 5 to 6 weeks. They die off suddenly.

Brooder pneumonia may occur at any time. Diarrhœa is a characteristic of all three. These diseases are responsible for very heavy losses each rearing season, many thousands dying from any one of them.

Method of Feeding Chickens on Farms.

First Period.—Third day after hatching to end of sixth week.

7 A.M.—Seed mixture No. 1.
10 A.M.—Meal mixture No 1.
2 P.M.—Meal mixture.
6 P.M.—Seed mixture.

Second Period.—Seventh to tenth week.
7 A.M.—Seed mixture No. 2.
NOON.—Meal mixture No. 3.
6 P.M.—Seed mixture.

Third Period.—Eleventh week until the pullets are put into their laying-house at 1st September and receiving the laying mixture.
7 A.M.—Meal mixture No. 3.
NOON.—Seed mixture No. 3.
6 P.M.—Seed mixture No. 3.

Note.—Meal mixture No. 1 is changed to No. 2 at the end of the first or second week. Soured milk may be given instead of water from the beginning of the second week. It is an aid to growth. Continue its use for at least 6 weeks, or longer if possible.

Seed Mixture No. 1.

	lb.
Chicken wheat	35
Fine kibbled maize	21
Pinhead oatmeal	35
Canary seed	14
Hemp-seed	7
	112

Mash Mixture No. 1.

Hard-boiled egg—1.
Oatmeal—3 parts by weight.

Seed Mixture No. 2.

	lb.
Broken wheat	35
Medium-fine kibbled maize	21
Groats	35
Small dari	14
Hemp-seed	7
	112

Mash Mixture No. 2.

	lb
Bran	24½
Thirds	21
Oatmeal	28
Maize meal	28
Meal and bone meal	7
Ground linseed	3½
	112

Seed Mixture No. 3.

	lb.
Wheat	35
Kibbled maize	21
Oats	35
Dari	21
	112

Mash Mixture No. 3.

	lb.
Bran	21
Thirds	21
Gr. oats or crushed oats	28
Maize meal	28
Fish meal or meat and bone meal	10½
Ground linseed	3½
	112

The quantity of food to be given to a certain number of chickens is not stated. At each meal they should have as much as they will eat up greedily, giving them a very full meal in the evening.

The quantity increases daily after the first week.

5. *Housing of Adult Stock.*

Undoubtedly the proper systems of housing poultry are (1) the portable and (2) the colony methods. No. 1 means small flocks in houses that are portable or capable of being easily moved periodically from one part of a field to another. All the benefit of clean ground is available. The labour is no doubt slightly greater owing to the number of houses required for a given number, say in flocks of 25 to 50 hens, and their distance apart. No. 2 means larger flocks of, say, 100 hens. The houses are more permanent and would remain in the same field for one or two years. To remove them they would require to be made sectional and bolted so that they could be easily taken down. In general, the farm poultry-house could very well be improved. It is very dark, lacks ventilation, and cleanliness is too often forgotten.

An existing house may be modernised by (1) inserting a floor light, (2) admitting more fresh air by providing adjustable shutters or windows of glass in the front, (3) giving more attention to the internal arrangements, such as putting in a droppings-board, proper perches and nest boxes, and by regular cleaning and disinfecting.

No. 1. To house a flock of 100 hens: four houses to hold twenty-five in each, or one with fifty and two with twenty-five each (Figs. 23, 25, and 26). This is a good house for a flock of twenty-five. The measurements can be readily followed. The same design would be suitable for a fifty unit.

No. 2. Houses to hold 100 to 150 hens in each. This is a profitable and economic flock, but the houses are more permanent, and the hens do not have all the advantages of change of ground that they have in No. 1. On farms where large numbers of birds are kept this system would be more economical (Figs. 24, 27, and 28).

(*a*) *Pure air.* This is very important. Too many farm poultry-houses lack proper means of admitting fresh air or ventilation. Lack of it lowers the health and vigour and predisposes the hens to disease such as colds, roup, and other respiratory disturbances. Protection from wind, rain, and snow is necessary, but a regular supply of fresh air is essential to health and egg production. The hen has a high body temperature, rapid respiration, and no sweat glands. She therefore removes a large amount of waste moisture from the body through her breathing organs, consequently using more air in

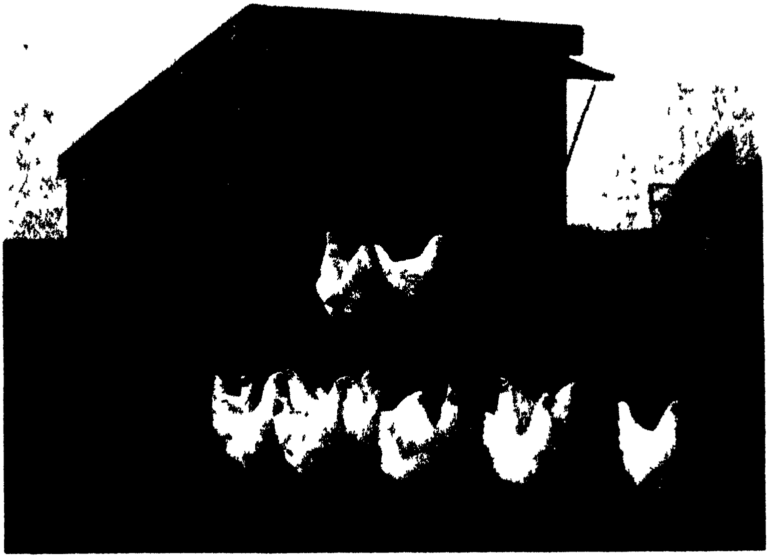


Fig. 23.—*Portable Poultry House* (*No.* 1).

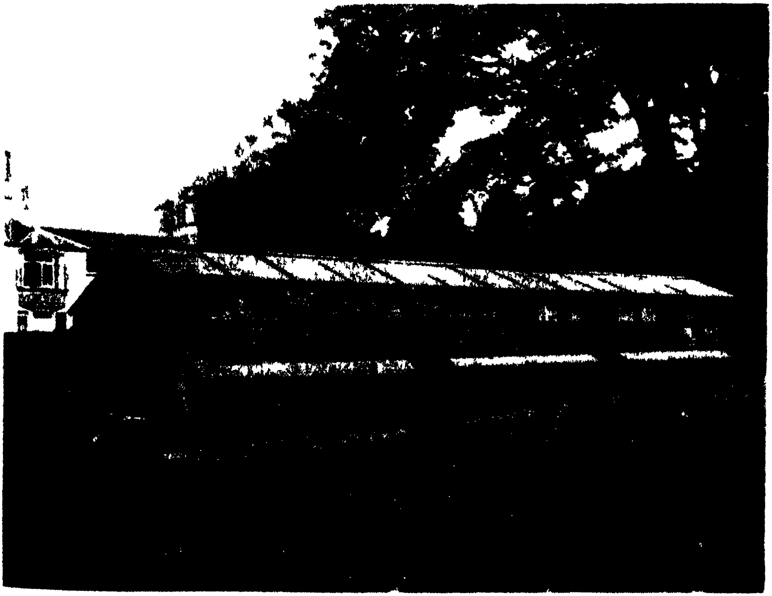


Fig. 24.—*Poultry House—Colony Method* (*No.* 2) (30′ × 10′).
This photograph illustrates a larger house than 30 × 10′.

proportion to her weight than other domestic animals. The air in the house becomes quickly saturated with moisture when there is a lack of fresh air. Closing the house—*i.e.*, admitting no fresh air—is wrong. Moisture, combined with lack of air, is very harmful. The importance of this cannot be too strongly emphasised. Admittance of fresh air is usually provided in the front of a house of the shed type by means of adjustable windows and open space just under the roof. (*b*) *Sunshine:* Whilst on farms the hens will be outside most of the day, they may be confined more closely to the house in winter. In order to take full advantage of light and sunlight, one or two floor lights are provided in a good house. The additional light openings provided in the ends or back of the house should be placed just low enough to get light falling on all parts of the floor. Remember, however, that too much glass makes a colder house. The hens will take full advantage of sunlight, and delight to stand or lie on any part of the house which it particularly strikes. Keep the glass in good repair, protecting it with half-inch mesh wire-netting on the outside from being damaged by other animals. (*c*) *Floor Space:* There is a tendency to overcrowd the hens in order to reduce the cost of the house. This is false economy. Overcrowding and lack of fresh air together are very detrimental to health and good egg production. In any part of Scotland where the climatic conditions will allow the hens to be out practically all winter a smaller amount of floor space may do, say 2 to 2½ square feet per bird (House No. 1 will take from 20 to 25 hens); but in any locality where the climatic conditions are less favourable, and the hens are likely to be kept enclosed pretty constantly during winter, a slightly larger house will be required for 25 hens in order to allow them about 3 square feet each. There is more economic return from a flock that is allowed plenty floor space. (*d*) *Shape:* As a rule, the shed or lean-to type of house (No. 1) is rather warmer in winter than the span-roof type (No. 2). In the latter there is too much air space for comfort. In Canada and the United States, where it is used, what is called a straw loft is made—*i.e.*, boards are laid across the span and the space above filled with straw. The straw loft is cool in summer and warm in winter. The shed type is more easily constructed, and cheaper than the span-roof type. A portable house should be mounted on sledge-runners or skids to facilitate its easy movement from one part of a field to another. It should be strongly built to withstand the strain of moving, preferably of match-boards or weather boarding, ¾ to ⅞-inch in thickness. (*e*) *Cleanliness and disinfection:* To ensure a parasite-free and disease-free house, it should be thoroughly cleaned at least twice yearly, and especially before the pullets are put in.

Examine carefully for red mite such places as perch ends and their sockets, ends of droppings-board, nests, &c. If they are found, take out all movable fittings, remove all litter and nest material, paint the interior with ordinary commercial creosote obtained from gasworks, also all the fittings, before putting them back.

Red mite can do an immense amount of harm by lowering the general health and egg production. Their presence is difficult to detect as they do not live on the hens, but chiefly in the above-mentioned places, coming out at night when the hens are on the perches. They suck blood, hence their characteristic red colour after feeding. At other times they are pale yellow in colour.

(*f*) *Internal Arrangements:* Allow one nest for six hens. Renew the nest litter frequently. A droppings-board should be placed 6 to 8 inches beneath the perches and fitted tight against the rear and sides of the house and well beyond the front perch. Light breeds require 7-inch perch room, and the heavy breeds 9-inch. Have a good-sized earthenware vessel for water, and a box for shell and grit, both of which should stand well above the floor level to prevent the floor litter being scratched into them, also a wooden trough for the soft mash, large enough to allow all the birds to get at the food at one time. After the meal is over fix it against the wall to be out of the way. (*g*) *General:* Repair and clean the windows whenever necessary. Periodically clean out all old litter. The best litter is a mixture of fresh straw and chaff. It should never be allowed to become damp or dirty, and never use mouldy or fusty litter. The front of the house should provide good circulation of air without draught upon the hens. In order to preserve the exterior the walls should be creosoted and the roof tarred yearly. Just before the pullets commence to lay, promising healthy pullets of uniform age should be put into their permanent laying-house. They will continue their development, and start laying without change in management. If they have started to lay before they are put in, the change will check egg-laying and cause a complete or partial moult. At the time they are put in they should be examined for lice, and if these are found on their bodies they should be given a dusting with a good insect powder. Attention to these points will assuredly increase the winter egg production.

6. *Feeding of Farm Poultry.*

As with the housing of poultry on the farm to take full advantage of free-range conditions, so also should the method of feeding be such as will encourage foraging. The hens will pick up quantities of all kinds of natural food—grass, weed-seeds, worms, slugs, small stones and suchlike, — the con-

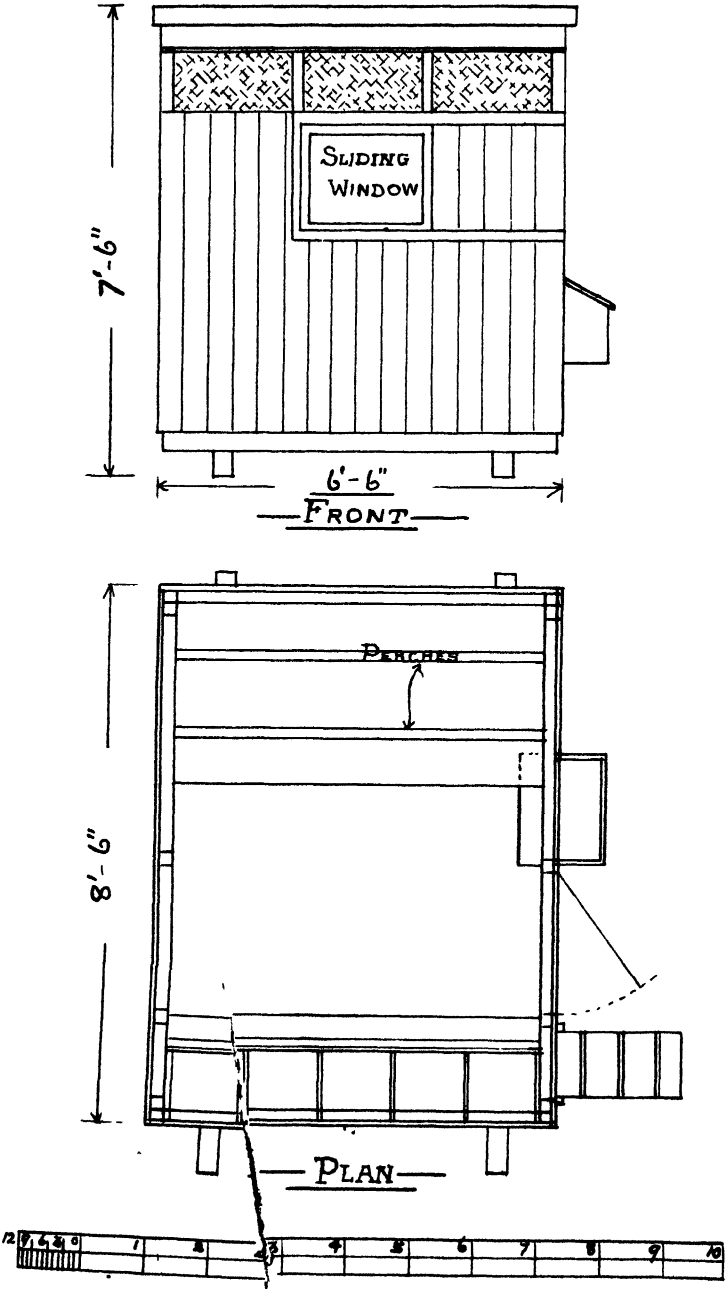
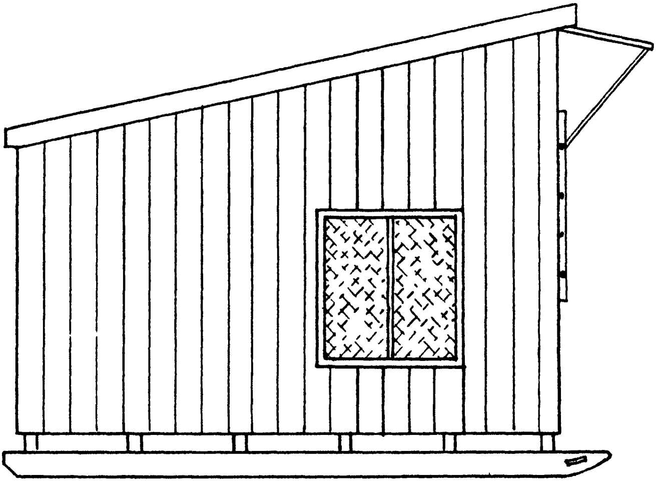
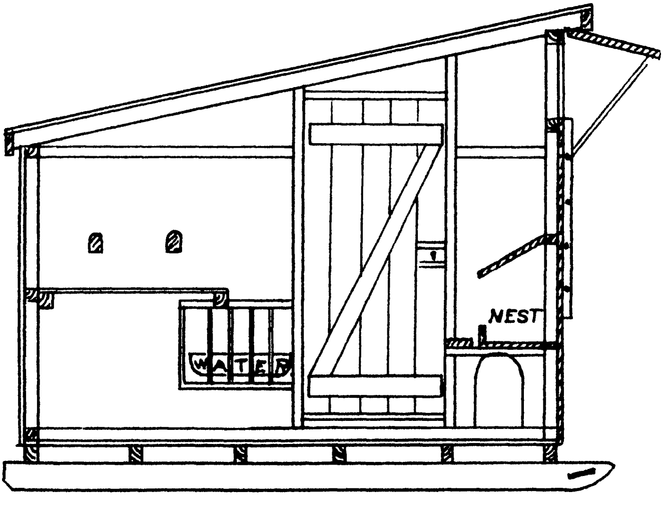


Fig. 25.—*Front Elevation and Plan of Portable Poultry House (No. 1).*



SIDE



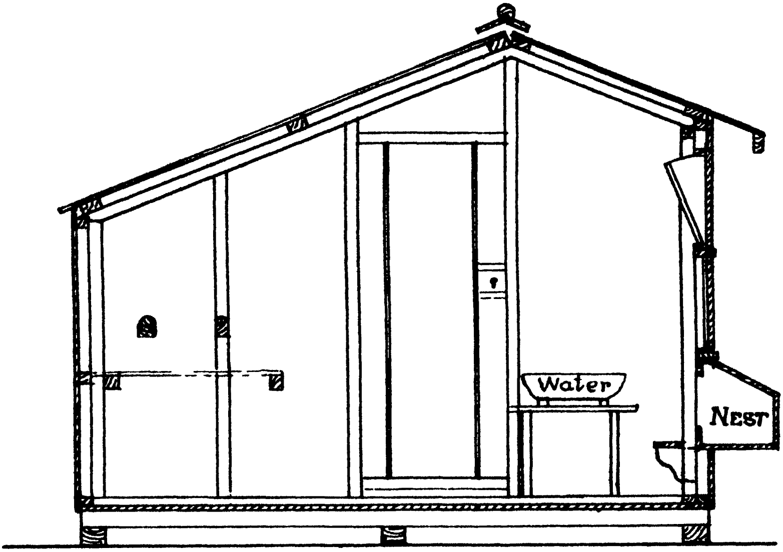
SECTION

Fig. 26.—*Side Elevation and Section of Portable Poultry House* (No. 1).

sumption of which lowers the food bill, and thus the farmer is in a favourable position to secure the maximum production with the minimum of cost in feeding. A grass field which has clover in it is greatly appreciated by the hens. They eat clover greedily. The pasture is improved by their droppings and by the removal of weed-seeds. From experimental results it has been shown that they eat slugs and worms that are injurious to crops, such as wireworm, &c.

(*a*) *Animal Food.* The saying "The early bird catches the early worm" is very applicable. When worms are plentiful a reduced quantity of animal food, such as fish meal, meat meal, and meat and bone meal, should be used and only increased when worms are scarce—*i.e.*, in winter when they do not readily come to the surface, and during spells of dry weather in summer when the ground is hard and dry. The skilled feeder should take note of these times and increase or curtail the animal food supply. It is one of the expensive ingredients of the ration. To feed it at such times, when nature's supply is plentiful, is wasteful. (*b*) *By-Products of the Dairy:* Skimmed or separated milk—preferably given soured,—buttermilk, and even whey may be utilised. Soured milk can be given for drinking if it is plentiful. The soft mash in summer may also be mixed with it. It is specially valuable as an aid to summer egg production. On farms where cheese is made, whey can also be used for drinking and mixing of food. It differs from soured milk—the casein or protein part has been extracted during the process of making cheese. It is also excellent for mixing mashes for fattening cockerels. (*c*) *Grit:* On free range hens pick up small stones, reducing the necessity of supplying grit. Small stones are required in the gizzard. They take the place of the teeth of other animals. They help to grind the food—meals and grains—into a pulp. Thus they are as necessary as any other part of the food of the hen; without them proper mastication is impossible. Heavy clay and peaty soils may be deficient in small stones, but they are plentiful in other classes of soils.

It is, moreover, important to give the hens shell-forming material, such as oyster shells or ordinary shells from the shore, or limestone chips. These provide carbonate of lime for the egg-shells. Hens prefer shells to limestone chips; it may be largely on account of the white colour—nevertheless they show their preference and it ought to be satisfied. (*d*) *Water:* This is not the least in importance. One hesitates to make the statement, but in a great many instances the water supply is too often neglected—no doubt unintentionally and without realising that water is necessary to carry on the vital processes of the body and also for the formation of the egg, the water content of which is over 70 per cent. A scarcity of water is detrimental to good egg production. The water supply



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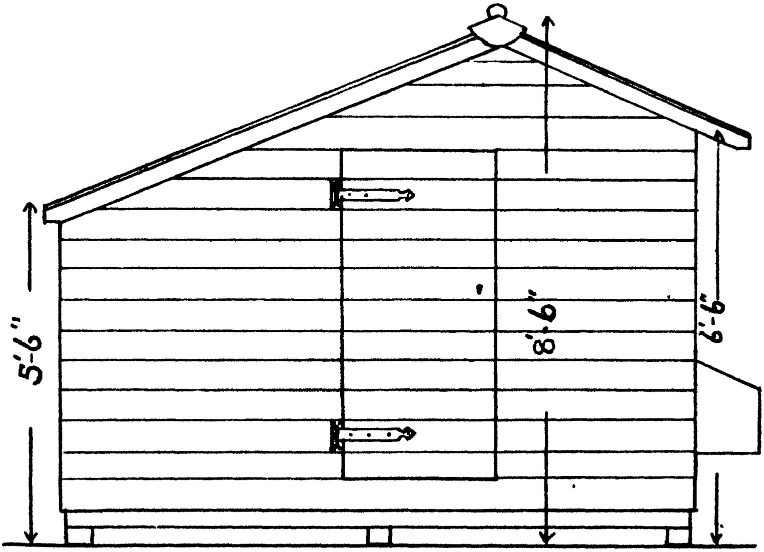

Fig. 27.—*Section and End Elevation of Poultry House—Colony Method* (No. 2).

is apt to be neglected on free range; if it has to be carried it is one of the drawbacks of the system, increasing the labour. (*e*) *Vegetable food:* When hens have a wide range over grass, they lay eggs with deep-coloured yolks as compared with hens less favoured—*i.e.*, curtailed range and backyards. With them green vegetables are a most important factor at all seasons. Whilst grass is succulent for the greater part of the year, it should be augmented during the winter and early spring with any vegetables that are available—cabbages, thousand-headed kale, rape, swedes, mangels, &c. Green food is a great aid to health and egg production. Cooked potatoes may be included in the wet mash, but, as they are very starchy, the quantity should be small, otherwise the hens may become overfat, a condition which is detrimental to good egg laying.

(*f*) *The following system of Feeding is recommended for the Farm:* Morning, 7 A.M. in summer and as soon as it is daylight in winter, three-quarters to 1 ounce per hen of soft food, the meals being scalded with boiling water and cooked vegetables added.

The ingredients of the mash mixture are—

	lb.
Bran	21
Thirds	21
Crushed oats or Sussex ground oats .	28
Maize meal	28
Fish or meat meal	10½
Ground linseed meal	3½
	112

Note.—The linseed meal is omitted at the end of spring, the quantity being made up with bran.

11.30 A.M. (in winter only) 1 ounce per hen of grain mixture, scattered on the grass away from the house when the weather is fine, at other times raked into the floor litter inside the house. Evening—3 to 4 P.M in winter—5 P.M. in summer—1 to 1½ ounce per hen of grain mixture given as above.

The grain mixture may be varied. (1) Equal quantities by weight of oats and kibbled maize; or (2) equal quantities by weight of oats and wheat; or (3) equal quantities by weight of wheat, oats, and kibbled maize.

Note.—Should the above ration be too much, it should be reduced until at each meal all the food is eaten. On the other hand, at times it may be necessary to increase the quantities. Common-sense will be a guide in the matter. (*g*) *Good production during the summer*, especially in June, July, and August, adds considerably to the income. Eggs are then going up in price, and every extra egg secured at this season increases the profits. (1) Make alterations in the feeding to suit summer conditions—*i.e.*, during dry weather, when insect life is scarcer, add a little extra fish or meat meal, mix the mash with soured milk; (2) add more vegetables to the

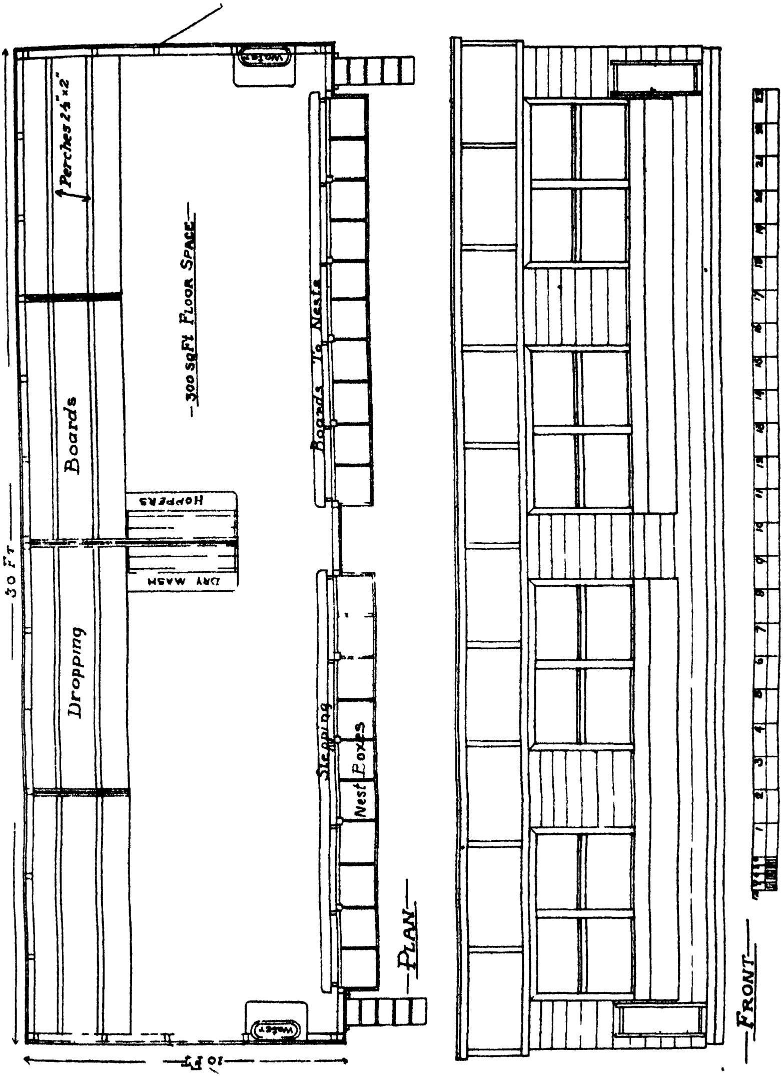

Fig. 28.—*Plan and Front Elevation of Poultry House—Colony Method* (*No.* 2).

soft mash—garden and field crops, nettles, dandelions, &c.; (3) give a plentiful supply of clean water or milk; (4) keep down lice and red mite; (5) give as much fresh air as possible day and night by opening the windows wide, except during rain or wind; (6) keep down broodiness in the way already described under breeds.

The following statement shows the initial outlays and income and expenditure of a flock on a general farm in the West of Scotland which was commenced in July 1925.

The statement is for the period 23rd July 1925 to 11th July 1926.

Initial outlay—		
100 White Leghorn pullets (3 months), at 8s. plus carriage		£40 16 5
1 house, 25′ × 12½′, ⅝″ boarding, ruberoid roof		43 15 0
Dry feeders		3 0 0
Water fountain and grit boxes		1 15 0
2 thirty-dozen egg boxes		3 4 0
Meals and grain purchased		40 6 10
		£132 17 3
Value of eggs sold		£107 17 6
Valuation at 11/7/26—		
90 hens @ 5s.	£22 10 0	
House and fittings, less 12½ per cent	41 8 0	
Meals on hand	0 12 0	
		64 10 0
		£172 7 6

Gross profit for period, £39, 10s. 3d.

The cost of labour has been excluded from the statement, as has also the manurial value.

Egg chart—

October	320	April	2042
November	1008	May	1942
December	1726	June	1528
January	1823	July	532
February	1722	(Up to 11th July)	
March	1926		

Total number of eggs for the period = 14,569.
Average for the period = 145·69.

The daily labour was as follows: To collect the eggs in the afternoon, and at the same time the mash hoppers were filled. The hens were given the grain, and ordinary cleaning done. Periodically fresh litter was put on the floor and in the nests.

A stream alongside supplied the drinking water. As the hen exit was always open, the hens could be out or in during winter. There was no reduction in egg production even when snow was on the ground.

Dry mash consisted of—

Bran	5 parts	Fish meal	6 parts
Thirds	5 ,,	Maize meal	7 ,,
Groats	5 ,,		

Grain allowance—Equal parts oats and wheat, 1½ oz. per bird per day.

I trust that the information contained in this short article may be of some help and guidance to farm poultry-keepers.

INSECT AND OTHER INVERTEBRATE PESTS OF 1925.

By R. STEWART MACDOUGALL, M.A., D.Sc., F.R.S.E., Consulting Entomologist to the Society.

LIVER ROT OF SHEEP.

THIS disease is due to the Liver Fluke of the sheep, Fasciola hepatica (*Distomum hepaticum*), a leaf-like or oval flat worm, which requires two host animals for the completion of its life-history—viz., a water-snail for its early stages, and the sheep for its later and adult stages. Drought results in great mortality of the special water-snail associated with the Liver Fluke, but in wet seasons these water-snails increase rapidly in numbers, and it is in, and following, wet years, because of marshy pastures and flooded meadows, that Liver Rot proves a scourge and claims many thousands of victims. The disease has been known since 1547, but it was not till 1883 that Mr A. P. Thomas of Oxford cleared away difficulties by showing the part the snail played, and by proving how the sheep became infected.

Cattle may also be infected, and such infection is not uncommon in Scotland, but the disease in cattle is not so serious as in sheep. Among hosts other than sheep and cattle, *Fasciola hepatica* has been taken from the pig, and, rarely, from man.

Description of Fluke.—This Liver Fluke, flat and brownish, measures an inch long by half an inch in breadth (Fig. 29). At the front end, at the tip of a somewhat narrowed triangular portion, is a cup-like sucker, at the bottom of which is the mouth. A little way behind this, on the under surface, in the middle line, is another sucker; this sucker is not perforated, and it is used as a fixing organ, by which the fluke clings to the wall of the bile-ducts where the adult flukes live.

Between these two suckers is a minute opening, by which the eggs of the Liver Fluke reach the outside. The body is covered by a tough protective cuticle, in which numerous backwardly directed spines are embedded, these favouring a forward, and preventing a backward, movement.

The Liver Fluke is hermaphrodite, and both the male and female reproductive organs are complex; probably there is self-fertilisation. Very large numbers of eggs are laid, and, as will be explained below, over 300 individual flukes may

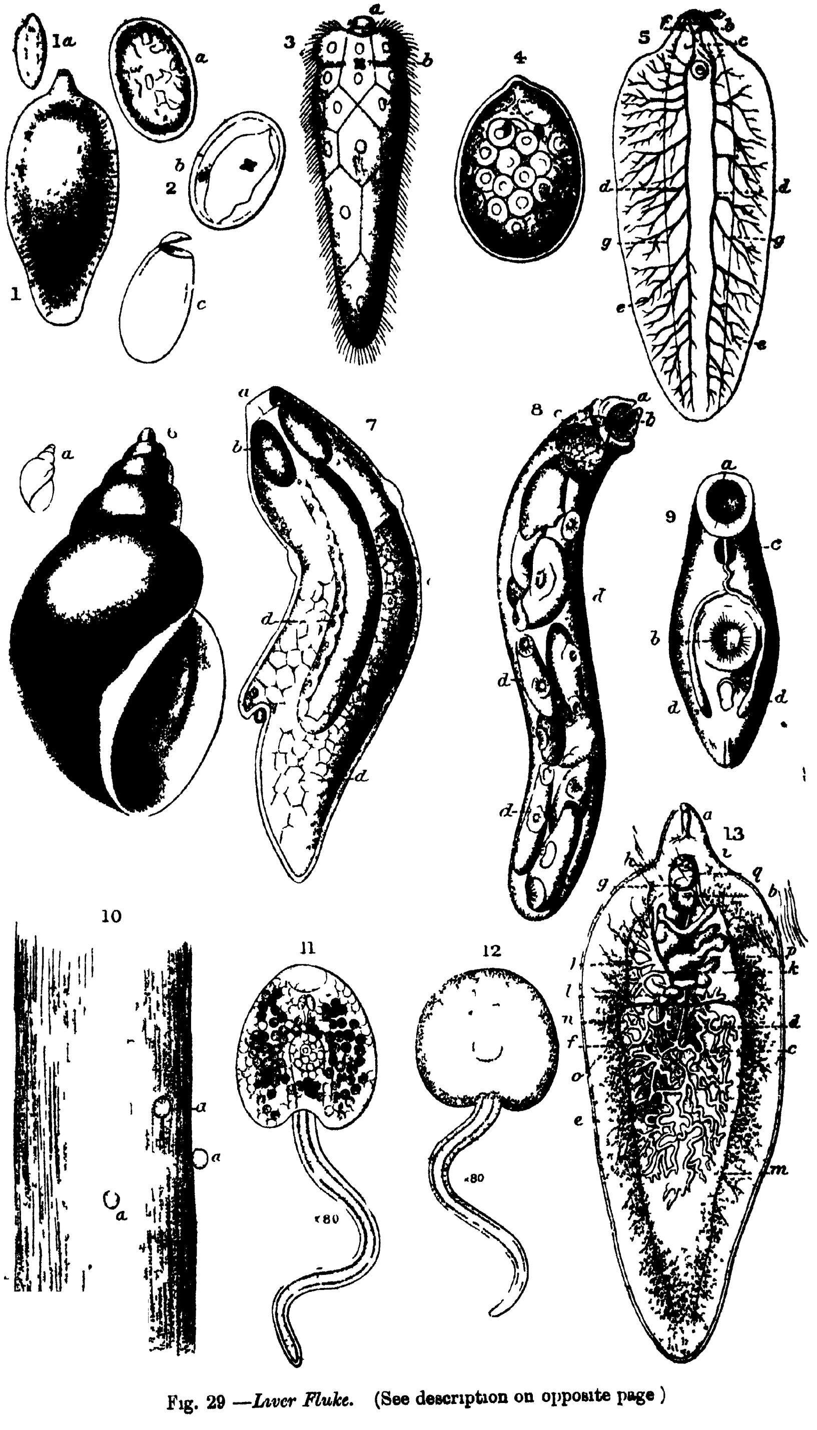

Fig. 29 —*Liver Fluke.* (See description on opposite page)

owe their origin to a single egg. This great power of multiplication is nature's provision against the numerous risks in the life-history.

Life-history of the Liver Fluke.—The eggs are laid in the bile-ducts of the sheep's liver. In order to hatch, the eggs must reach the outside, which they do by being carried into the intestine in the bile, and thence along the alimentary canal, passing to the exterior in the droppings of the sheep. The eggs are very small—they can be detected with the microscope under a magnification of seventy or eighty,—have a horny shell, and hatch by the opening of a small lid (Fig. 29).

If the eggs fall on dry ground they remain unhatched, but if they fall into, or are carried to water, an embryo, known as a *Miracidium* (Fig. 29), hatches. The *Miracidium* is microscopic in size, and is covered with cilia or lashers, by which it moves through the water. At the front end is a conical projection. In order to develop further, this ciliated embryo must find a special water-snail, named *Limnæa truncatula* (in other countries other kinds of snail serve). By some kind of chemical attraction the *Miracidia* are attracted to the snail. If too many embryos reach the snail, the snail may die; if the embryo fails to find a snail in some hours, the embryo dies.

On reaching the water-snail the *Miracidium* bores through the snail's skin—thrusting in the conical projection, and rotating by the action of the cilia—and reaches and takes up a position in the roof of the snail's breathing chamber. The cilia are now lost, and such nerve elements, as the embryo had, degenerate, and the *Miracidium* becomes an oval sac of cells, known as a Sporocyst. Within the Sporocyst certain

Description of Fig. 29.

1. Adult fluke, natural size: 1*a*, young fluke, natural size (Raillet).
2. Eggs: *a*, egg with developing embryo; *b*, egg with embryo; *c*, egg-shell (Raillet).
3. Ciliated and free embryo: *a*, boring apparatus; *b*, eye-spot (Leuckart).
4. Embryo as encysted in snail (Thomas).
5. Diagram of digestive apparatus and nervous system: *a*, mouth sucker; *b*, pharynx; *c*, gullet; *d*, branches of intestine with *e*, their branchlets; *f*, nerve ganglia; *g*, ventral nerve (Raillet).
6. *Limnæa truncatula*: *a*, natural size (Raillet).
7. Redia of *Distomum hepaticum*: *a*, mouth; *b*, pharynx; *c*, digestive tube; *d*, the cells that give rise to cercariæ (Leuckart).
8 Rediæ containing cercariæ: *a*, mouth; *b*, pharynx; *c*, digestive tube; *dd*, cercariæ (Leuckart).
9. Cercaria dissected from cyst: *a*, anterior sucker; *b*, ventral sucker; *c*, pharynx; *dd*, branches of intestine (Leuckart).
10. Stem of grass with three encysted young flukes (Thomas).
11. Free-swimming cercaria just before about to encyst (Thomas).
12. The same slightly older (Thomas).
13. Genital apparatus of fluke: *a*, digestive tube; *b*, ventral sucker; *c*, anterior testicle; *d*, its deferent canal; *e*, posterior testicle; *f*, its deferent canal; *g*, seminal vesicle; *h*, genital sinus; *i*, cirrhus pouch; *j*, ovary; *k*, oviduct; *l*, shell-gland; *m*, yolk-glands; *n*, longitudinal yolk-gland canal; *o*, transverse yolk-gland canal; *p*, uterus; *q*, vagina (Raillet). (From 'The Animal Parasites of Sheep,' by Cooper Curtice.)

of the cells—germ cells—take on an elongated form, and develop into the next stage in the life-history, known as the Redia (Fig. 29). The elongated Redia has a mouth, a muscular pharynx, and a rudimentary alimentary canal. Internally there are also germ cells. Near the front end of the Redia is a swollen circular ring or collar, and towards the hind end two blunt projections, which aid the Redia in its movements. The Rediæ—several are produced in one Sporocyst—leave the Sporocyst, and bore their way to the snail's liver. The Rediæ live on the tissues of the snail, and may kill it. Certain germinal cells inside the Redia may give rise to a new generation of Rediæ, and then the germ cells of these develop into still a new form of individual known as the Cercaria. The Cercaria is really the young fluke. This Cercaria has a flat and somewhat heart-shaped body (Fig. 29). A mouth is present, and two suckers which are in the position of those of the adult fluke; there is a pharynx, a forked alimentary canal, and a tail to be of service in locomotion. The Cercariæ leave the Redia and leave the snail, and, passing into the water, swim about. After a free life of some hours to a day or two, the Cercaria, shedding its tail, creeps to a blade of grass, to which it anchors itself by the second sucker, and forms round itself a clear cyst, secreted by special glands. Under cover of the cyst development to the adult fluke stage continues. In due course the grass is eaten by a grazing sheep; the swallowed cyst is digested, and the young fluke, thus freed in the sheep's alimentary canal, makes its way to the bile-ducts of the liver, there to become the adult egg-laying fluke.

Earlier it was stated that a single egg of the Liver Fluke might result in over 300 adult flukes. It may happen in this way: a *Miracidium* may give rise to two Sporocysts, a Sporocyst may form as many as eight Rediæ; each Redia may give rise to other Rediæ, and if these Rediæ gave rise to twenty Cercariæ, we would have—

$$1 \times 2 \times 8 \times 20 = 320 \text{ flukes.}$$

We don't mean, of course, that all survive, but this power of egg-laying and multiplication is a response to the numerous risks militating against the completion of the life-history—such risks as failure of egg or embryo to reach water, absence of water-snail, death of snail, drying up of cysts, cysts not swallowed.

How favourable the conditions for the infection of our sheep with the Liver Fluke may be, will be understood when I say how some time ago I took from the sides of a trough in a field on a farm in Midlothian, with sheep all around, a number of specimens of *Limnœa truncatula*, the water-snail. Preparations of the livers of these snails were made, and the microscope revealed a number of Rediæ.

In some seasons and in some localities Limnœa is very abundant. Walton[1] has found the nature of the soil to be an important factor regarding the presence and abundance of the snail *L. truncatula.* "There was a marked coincidence between the distribution of clay and of *L. truncatula,* and also of *L. truncatula* and Liver Rot." The snail was found active all the year round; activity is checked by drought or severe frost. Desiccation is speedily fatal to the snail, but the snail eggs are more resistant. *L. truncatula* is widely distributed in Britain from north to south.

Another water-snail, *Limnœa peregra,* is sometimes present with *L. truncatula,* but is to be found also in situations and circumstances where *L. truncatula* is absent. *L. peregra* should be suspected as a possible intermediate host of the Liver Fluke. In other continents—for *F. hepatica* is a widely distributed pest—other and different species of water-snail act as intermediate hosts.

How attacked Sheep are affected.—The parasites feed on blood. The course of the symptoms and the accompaniments of infection depend on whether the infestation is overwhelming or average. In the former case death of the sheep results quickly. In the latter case there is a more or less definite cycle of happenings. To begin with, external symptoms may not be pronounced, and the sheep, maintaining a good appetite, fatten and seem to be thriving, because the liver at first is stimulated to increased activity; but with increasing damage to the liver by the parasites, appetite fails, thirst increases, the animal loses condition, and externally a characteristic swelling appears under the throat, owing to the pendant position of the head in grazing (this swelling disappears at night when the animal is resting), and at last death follows. A post-mortem examination of the spoiled liver reveals marked cirrhosis, with the bile-ducts much enlarged, their walls being thickened and calcified.

There is another fluke, *Fasciola lanceolata,* parasitic in the liver of the sheep. This flat worm is over quarter of an inch in length, very narrow, lance-shaped, broader behind, and narrowing to the front end. It is not often met with in Scotland, and the consequences of its presence are not nearly so serious as with *F. hepatica.* During the autumn, through the courtesy of Mr A. M. Trotter, M.R.C.V.S., of the Moore Street Institute, Glasgow, I had opportunity of examining the liver of a sheep infested with *F. lanceolata.* Mr Trotter informed me that "quite a number of *lanceolata* had been detected of late."

Treatment.—To keep down the water-snails, ditches should be kept as free as possible from overgrowth of vegetation. *L. truncatula* is to be found in such ditches, which should be cleaned out in places that have a bad reputation for Liver Rot; the mud and plant matter removed at the cleaning should be covered with gas lime, which kills snails and their eggs.

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[1] "Liver Rot of Sheep and Bionomics of *Limnœa truncatula* in the Aberystwyth Area," by Charles L. Walton, M.Sc. 'Parasitology,' 1917.

One favouring result of the experimental work of late years, in certain parts of Wales that suffered greatly from Liver Rot in sheep, is the discovery that weak solutions of copper sulphate are fatal to the snails. Walton,[1] in view of successful experiments in Wales, recommends spraying wet land with a 2 per cent solution of copper sulphate, while for narrow wet ditches he recommends dusting, by means of bellows or a knapsack dry sprayer, with a mixture of one part of copper sulphate and two parts China clay (kaolin). It is advised that stock should not be allowed entry to treated ground until after heavy rain has washed the copper sulphate into the soil; one should also keep in mind whether the treated flowing streams have to be used for watering stock. Copper sulphate is also dangerous for fish. Mr J. H. Norris[2] believes that "copper-sprayed pasture is not dangerous for animals one week after application."

In laboratory tests weaker solutions of copper sulphate harmless to cattle killed the snails, although still harmful to fish.

In mixing the copper sulphate, wooden (not metal) vessels should be used.

As lessening the chance of infection of the sheep, there should be drainage wherever possible, and suspicious fields or parts of fields should be avoided in a season favourable to fluke.

Salt has often been recommended as fatal to snail and the early stages of the Liver Fluke, but recent evidence is somewhat contradictory.

Much attention has been given lately to the use of an extract of Male Shield Fern as a treatment which would reach and kill flukes in the liver, and also to the efficacy of a proprietary preparation known as Danistol. Considerable debate has taken place for and against the use of these. In spite of adverse opinion, experimental work in the last two years favours the view that doses of extract of Male Shield Fern may help to control fluke in sheep by destroying the egg-laying flukes in the liver. Flukes in the young stage seem to evade the treatment. The doses must be carefully graded, for one can easily kill the fluke-infested animal if certain strengths be exceeded. The work is for the expert

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[1] 'Journal of Ministry of Agriculture,' August 1923.

[2] "Liver Fluke Disease in Sheep and Cattle," by J. H. Norris, M.R.C.V.S., Director Veterinary Research Laboratory, in 'Journal of Department of Land and Agriculture.' Dublin, August 1925.

Veterinary Surgeon, who should be consulted. Farmers interested are referred for information and details to two recent Papers, one in the 'Journal of Comparative Pathology and Therapeutics' for March 1925, by R. F. Montgomerie, B.Sc. (Edin.), M.R.C.V.S., the Veterinary Adviser, Department of Agriculture, University College of North Wales, Bangor; and the other on "Liver Fluke Disease in Sheep and Cattle," by J. H. Norris, M.R.C.V.S., in the 'Journal of the Department of Lands and Agriculture, Ireland,' for August 1925.

GAPES IN POULTRY.

Gapes is a disease caused by a round worm named *Syngamus trachealis*, which in its last or adult stage is found in the windpipe of the bird, a common position, in which the worms may be found in numbers, being where the windpipe or trachea branches into the main bronchi. The worms are not confined to this special region, for a laying open of the windpipe of a chicken dead of Gapes reveals pairs of worms here and there along the windpipe. *Syngamus* (the word means "joined together") *trachealis* is not found as a single worm when adult, but always in pairs, a male and a female, the copulating apparatus of the male at the hind extremity of the worm being permanently fixed in the reproductive opening of the female, which is situated in the anterior third of the worm. This gives the parasite a forked or Y-shaped appearance; the thinner arm of the fork is the male. The male measures up to about ¼-inch and the female three times as long; there is, however, considerable variation in size. smaller sizes being the more common.

The Gape-worm is not confined to fowls; it is well known in turkeys, as also in a number of other birds—*e.g.*, game birds, sparrows, starlings, and rooks. Chickens specially suffer from the parasite, the yearly loss being high.

The mouth of the worm is surrounded by a strong horny capsule, which, fixed in the lining membrane of the windpipe, gives rise by the sucking of blood to swellings or abscesses that weaken the bird, while at the same time the resulting copious secretion of mucus and saliva and the blocking of the windpipe by the worms tend to suffocate the birds. The affected birds strain and yawn and gape for air. A sticky mucus in which worms may be found entangled is coughed out; loss of condition increases, and young birds especially die of exhaustion. A considerable amount of work has been done on the biology of the Gape-worm—Raillet and Megnin and Walker and Waite, for example, having conducted experiments. There has been considerable difference of opinion as to details, and the statement is almost general in the literature that, owing to the way the male is fixed to the female, the laying of eggs is impossible. Thus the eggs are described as reaching the open by the rupture or disintegration of the body of the coughed-out females. Recent experimental work by Ortlepp[1] proves a suggestion previously made that the female can and does lay eggs during life, these eggs, as proved by Sheather and Shilston working with the *Syngamus laryngeus* of cattle in India, being "ejected with some force from under the posterior flap" of the structure associated with the male reproductive apparatus.

Following then Ortlepp's experimental work, the life-history of the Gape-worm may be stated as follows: Eggs of the worm, reaching the outside either in the fæces of the affected bird or by the rupture of coughed-out worms, continue their development, in favourable conditions of temperature and moisture, until the stage when the young worm is ready to hatch. Eggs in this stage, or newly hatched young worms, are taken up by a chicken—*e.g.*, in contaminated water or food,—and the young eel-like worms next appear in the lungs of the chicken. How the young worms reach the lungs from the gullet is very difficult to trace. Perhaps they bore their way or perhaps they are carried in the blood stream. Ortlepp favours the latter view. The young worms grow, and signs of difference of sex appear, *e.g.*, in the pointed tail of the female and the truncate tail of the male. Development continues until the worms, still very small, show all the characters of the adult. Till now the worms have been feeding on a diet of blood in the alveoli of the lungs of the chicken, and without doing appreciable harm; then, in just over a week from the time of infection, these worms migrate to the windpipe. The male becomes permanently fixed to the female, considerable increase in size takes place, sexual maturity is attained, and eggs begin to show in the excrement of the chicken in about three weeks from the time of original infection. This means that a complete life-cycle from egg to adult is possible in a month.

Earth-worms may also play a part as carriers of infection. Earth-worms that have swallowed infected soil are eaten by the birds, which thus become diseased.

Treatment.—Isolate infected birds.

Thoroughly cleanse houses, coops, hatching-boxes.

Keep feeding-troughs and water vessels scrupulously clean.

Do not overstock, and as far as possible in rearing chickens change periodically to fresh ground.

Burn or bury deeply birds that have died of Gapes.

Dip the end of a feather in oil of cloves or eucalyptus oil, introduce the feather to the trachea, and turn it round and round. On withdrawal some worms will likely be brought away on the feather, while others loosened will have a chance of being coughed out. Sometimes fumigation is tried for the same purpose by, for example, blowing camphor into a fumigating box containing the birds to be treated, or exposing the infected birds to carbolic acid vaporised by dropping the carbolic acid on a hot brick or shovel.

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[1] "The life-history of *Syngamus trachealis*, the Gape-worm of Chickens," by R. J. Ortlepp, M.A., Ph.D., in the 'Journal of Helminthology,' 1923, vol. i. pp. 119-140.

HAIR-WORMS IN DOMESTIC WATER SUPPLY.

Hair-worms are round worms which are long and very thin, suggesting strands of coarse hair. In their adult stage they are found in ditches or fresh-water streams (there is one marine form) or ponds or puddles, moving in the water or coiled singly or several together round water plants. When a number together are seen coiled round a water plant their appearance is so tangled and knot-like that it seems as if it would be impossible to disentangle the knot. Hence the family name of the worms the Gordiidæ and the generic name Gordius, after the fabled peasant king of Phrygia. Gordius, a peasant, on his way to the temple of Jupiter, was proclaimed king, and in gratitude consecrated his waggon to Jupiter. The knot by which he secured the waggon to the temple was so skilfully tied, without any ends showing, that it appeared impossible to untie, and it remained untied until Alexander the Great cut the Gordian knot with his sword.

Two of these worms, both males, appeared in tap water in the west, and came to me for determination.

The worms have a very tough outer covering; they taper slightly in front and behind; the male is recognised by having the tail-end forked.

The life-history is very interesting, as the early stages are parasitic, chiefly in insects. The female worm, after fertilisation, lays her eggs, high in number, in the water. When developmental changes in the egg have been completed, there issues from the egg an immature worm with a proboscis provided with hooks and a boring apparatus. This immature worm moves in the water or passes to the bottom until some aquatic insect-larva appears, into which the young Gordius bores and then takes up position in a muscle or the fatty body of the host. Here further changes in the young worm take place, until at length the aquatic insect-larva falls a prey, say, to some carnivorous beetle. The young Gordius worm develops in its new host, and may take up nearly the whole abdomen of the beetle at whose expense it has been developing. The Hair-worm, now practically mature, leaves the beetle, and, making its way to the water, reaches its final, free-living, egg-laying stage. There are gaps in our knowledge of these hairworms which call for increased study: for example, several times these Gordius worms have been found by me in gardens, after heavy rain. voided by ground beetles that do not fly and presumably had no access to pond or stream or aquatic insect.

THE APPLE FRUIT MOTH OR APPLE MINER
(*Argyresthia conjugella*, Zeller.)

A feature in the late summer and autumn of 1925 was the destruction of apples over a considerable area in the north and north-east of Scotland by the caterpillars of the Apple Fruit Moth. The attack by the *Argyresthia* caterpillars is the more interesting, as it is the first record in Scotland. Apples were destroyed in Caithness, Sutherland, Cromarty, Ross, Inverness, Nairn, Moray, Banff, Aberdeen, Kincardine; also, but on a less scale, in Perthshire, Clackmannan, and Peebles. All kinds and varieties of apples were affected, culinary and dessert, late and early, soft and hard kinds all being attacked.

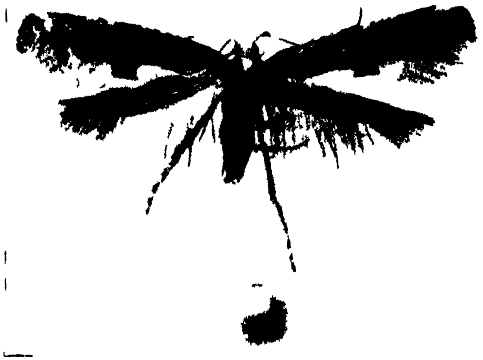

Fig. 30 —Argyresthia conjugella. (Magnified)

By permission of H M Stationery Office, from my Paper on this Moth in the 'Journal of the Board of Agriculture for Scotland, January 1926

The normal feeding place of the *A. conjugella* caterpillar is the "berry" of the rowan-tree and not apple. The moth has been known for a number of years as one found flying about rowan trees in summer, from the south of England right up to the Caledonian Canal.

The caterpillars have been recorded as attacking apples in Sweden (1875, 1908, 1909, 1916), Norway (1904), North and Central Russia (1913), Denmark (1919), North Germany (1921), Japan (1891), British Columbia (1896).

Description of Moth.—Head white; body brown; front wings brown or purplish-brown; the front margin of the wing shows white spots here and there; near the middle of this fore-edge and between two white spots is a four-sided brown spot; hind margin of front wings white, with a squarish brown spot near the middle of the hind edge; hind edge fringed; hind wings dark grey, with long fringes on the hind edges. The antennæ show alternate brown and white rings; legs also brown and white (Fig. 30).

Larva (Figs. 31 and 32).[1]—The caterpillar has sixteen legs, and when full grown measures between ¼-inch and ⅓-inch. The general appearance of the caterpillar can be gathered from an examination of Figures 31 and 32. Its colour varies according to its age. The youngest caterpillars are pale white; the slightly larger caterpillars are dirty-white or whitish-yellow or greyish, with a tinge of red, while later and till the end of their life the caterpillars are flesh-red. The joints of the caterpillar are quite distinct; in the older caterpillars the redness of the colouration is not quite so marked at the junction of joint with joint. The head is brown-black, and, under magnification, short three-jointed antennæ can be seen. On each side of the head are six simple eyes. The first joint behind the head has two grey-black horny plates on its upper surface, the two plates being separated by a line. There is also a plate on the upper surface of the last joint, less chitinised than the plate on the first joint. On each side of the first joint is a spiracle, and a pair of

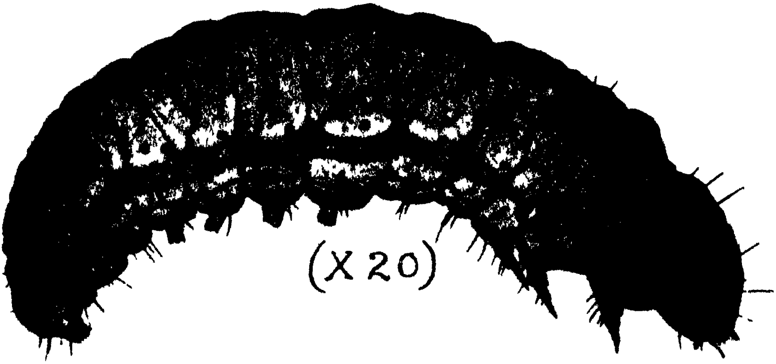

Fig. 31.—*Caterpillar of* Argyresthia conjugella.

By permission of H. M. Stationery Office, from my Paper in the 'Journal of the Board of Agriculture,' January 1926.

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[1] Figures 31 and 32 were drawn in my Laboratory by one of my senior workers, J. W. M'Hardy, B.Sc.

spiracles on joints four to eleven inclusive. All over the body are yellow hairs, each springing from a small, dark, raised spot. A careful drawing made under magnification shows that there are differences in the arrangement of the hairs on the first three joints behind the head.

Fig. 32.—*Caterpillar of* Argyresthia conjugella.
Magnified. Drawn from upper surface.

The Cocoon (Fig. 33).—The full-fed caterpillar spins a double cocoon of silk. The outside cocoon is loose and net-like in structure, the inner cocoon close and firm. The cocoon is white, and in shape oblong or spindle-like.

Life-history and Habits.—The moths are found in flight in June and July. After pairing, the females, within a week of their emergence from the cocoons, proceed to their egg-laying. The eggs are laid on the young apples (occasionally on the leaves). The caterpillar, on hatching, bores into the apple. Small, sunken, discoloured spots, each with a hole in the centre, mark the place of entry (Fig. 34). Later these spots become black. The highest number of caterpillars I found in one apple was nine. Reh,[1] in Germany, records as many as twenty-five. Apples of all sizes may show infestation; my specimens included examples from the size of a walnut to full-grown apples.

Fig. 33.—*Cocoons of* Argyresthia conjugella.
From nature. Magnified 4 times.

On entering the flesh of the apple, the caterpillars may feed just under the skin, but what is far more usual is for tunnels to be eaten out in the direction of the centre of the apple, but not directly by the shortest road. Each gallery winds and twists, and is not always easy to follow, especially with the complication of other galleries (Fig. 35). The line of the gallery is traceable by a brown discoloration, and by the wet frass which fills the gallery or mine behind the feeding caterpillar. Having reached the core of the fruit, the caterpillars eat into the pips and hollow them out, quite destroying them. The caterpillar is full-grown in from a month to considerably longer, according to the temperature.

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[1] 'Prakt. Ratg. f. Obst. in Gartenbau,' 1907 and 1908.

The full-grown caterpillars leave the apple, mining their way to the outside, and then let themselves down to the ground by a spun thread, or they may walk down the stem; sometimes they do not go quite to the ground, for they may take advantage of bark scales as shelter places, under cover of which to spin their cocoons.

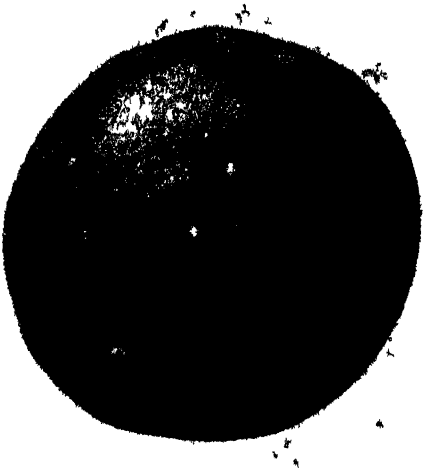

Fig 34 —*Apple showing entrance places of caterpillar of* Argyresthia conjugella *and also apple scab*

From nature Natural size.

Caterpillars that reach the ground enter the soil, or take advantage of litter or leaves, and proceed to spin their double cocoon and so pass the winter. In a number of cases in my own observations, with infested apples kept in breeding-cages, and with soil and litter offered for pupation, the full-fed caterpillars did not leave the apple but spun their cocoons inside the spoiled fruit. These cocoons were sometimes right in the core of the apple, sometimes towards the old calyx end of the apple. In other cases the cocoons were found just below the skin of the apple, an exit hole, for the escape of the future moth, having been first made to the outside. It is difficult to understand how moths from cocoons in the centre of the apple, and in the flesh with no exit prepared to the outside, can make their way to the open.

Caterpillars were found, in the apples that reached me from various sources, right through September and October.

The Rowan and its possible connection with the Apple Miner attack of 1925.—There is no doubt that the fruit of the rowan is the normal feeding-place of the caterpillar of *A. conjugella.* I believe that the severe attack on apples in the past season has a close relation to, and may be explained by, the comparative scarcity of rowan "berries" in 1925. In the districts in the north-east of Scotland where the Apple Miner was worst, the rowan berries in an average season are a feature. In 1925, however, the complete or almost complete absence of rowan berries in these districts was a matter of general comment. In absence of the rowan berries the moths turned their attention to apple, a not-far-away relation of the rowan. This suggested association between rowan, apple, and caterpillar receives strong support from experience in Sweden, as detailed by Lampa.[1] For example, in Sweden in 1904, rowan fruits were abundant. The years 1902 to 1904 had been favourable years for rowan fruit, and in this time the *Argyresthia* caterpillars had increased in number.

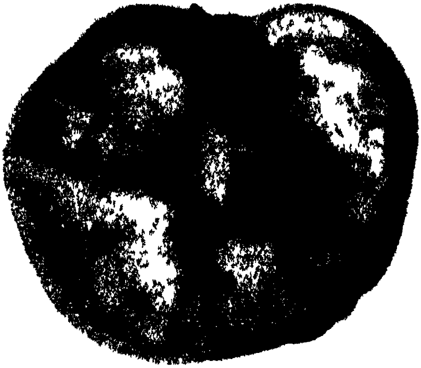

Fig. 35.—*Apple cut open to show work of caterpillars of* Argyresthia conjugella.

From nature. Natural size.

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[1] 'Ent. Tidskr.,' Arg. 27, 1906.

In 1904 the rowan had been very badly infested by *Argyresthia*, and in 1905 there were no rowans. In 1905 the *Argyresthia* moths, from June to August, were found flying round the rowan-trees, but no fruits were present to be used for egg-laying, with the result that the moths flew to the neighbouring apple-trees. From all parts of Sweden came complaints that the apples had been totally destroyed. A similar happening occurred in Sweden in 1916. In preceding years rowan berries had been plentiful, and the *Argyresthia*

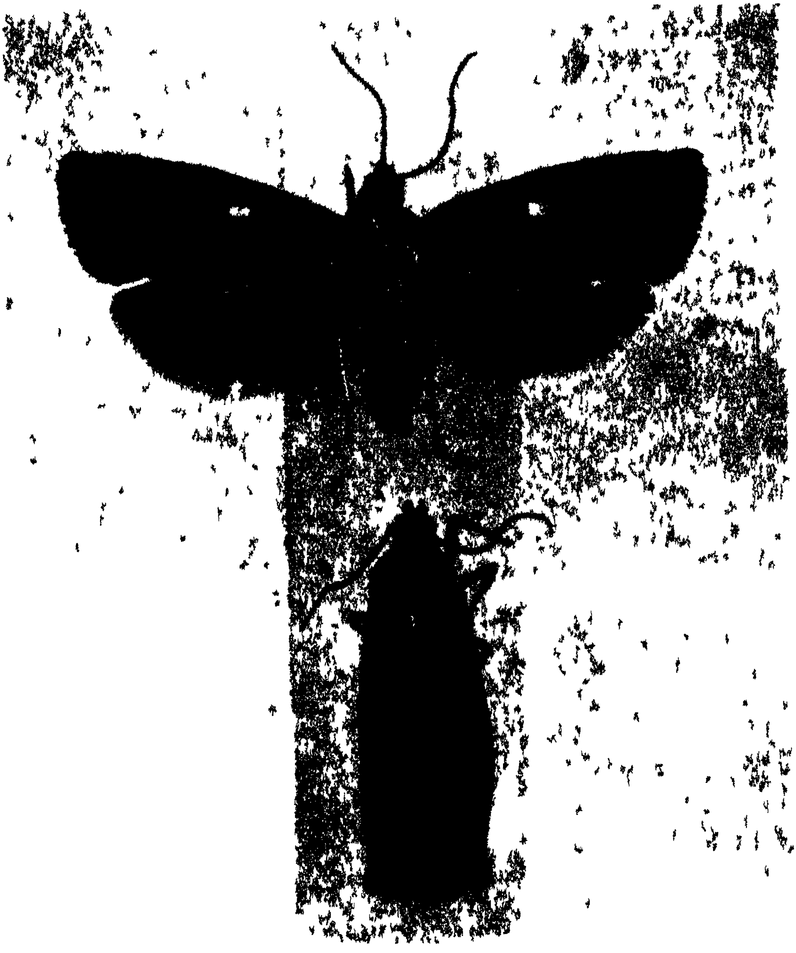

Fig. 36. *The Codling Moth with expanded wings and at rest.*
Four times magnified. From specimens in my collection.

moths multiplied. In 1916 the rowan inflorescences failed, and the apple crop was greatly damaged by *Argyresthia* caterpillars.

Treatment.—Where there has been damage to the apples this season, the soil under the trees should be dug so as to expose cocoons. Further, the digging of the ground would result in some direct destruction in the litter and in the soil; the tramping down or firming of the soil would destroy more.

During the months of attack it was a wise measure to collect fallen apples, with the caterpillars still in them, and to feed them to swine. Apples invaded by the caterpillars fall easily, and a jarring of the trees brings such apples down for collection.

A winter wash would do something to destroy cocoons on the bark of the stem; for example, a wash made of 2 to 2½ lb. of caustic soda dissolved in 10 gallons of water. Such a wash must not be applied save in the winter season, when the trees are dormant.

It is good policy to watch the rowan-trees, especially those in the neighbourhood of orchards and gardens. In a district where the moth was known to be present and the rowan inflorescences were scarce or had failed, it would be justifiable to spray the apple-trees with a lead-arsenate spray. A second spraying might be necessary, owing to the extended flight-time of the moths. The purpose of such a spray is to poison any caterpillars starting to eat their way into the fruit. Where apple scab is also feared—and it was very common on the apples sent to me for examination—a combined spray of Bordeaux mixture and arsenate of lead should be used, or, in the case of apple varieties sensitive to Bordeaux Mixture—*e.g.*, Beauty of Bath and James Grieve—a combined spray of lime, sulphur, and arsenate of lead. The Bordeaux Mixture or the lime sulphur prevents, or checks, the Apple Scab Fungus (*Venturia inæqualis*), and the arsenate of lead poisons not only *Argyresthia* but all caterpillars.

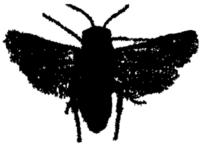

Fig. 37.
The Apple Sawfly.
From nature. Magnified.

Other Insect Enemies of Apple Fruits.

Argyresthia conjugella being a new enemy and its caterpillars not being known, the damage to the apples was ascribed in some places to either the caterpillars of the Codling Moth (*Cydia pomonella*) (Figs. 36 and 38), or those of the Apple Sawfly (*Hoplocampa testudinea*) (Fig. 37). The caterpillars of all three insects and also their damage are easily distinguishable.

Codling Moth Caterpillar.	Apple Sawfly Caterpillar.	Apple Fruit Miner Caterpillar.
Has 16 legs.	Has 20 legs.	Has 16 legs.
Colour pinkish white or cream white (Fig. 38).	Colour whitish yellow, with a dark plate on the last joint.	Colour flesh red (when well grown), and with a brown plate on the first and last joints.
½ to ¾ inch long when full grown.	½ inch when full grown.	¼ to ⅓ inch when full grown.
Generally enters the apple at the eye or calyx end, and makes a gallery right to the core, where it feeds for a time (Fig. 38).	Enters at the side of the apple and eats out an irregular cavity in the flesh.	Enters at the side of the apple and makes for the centre by a winding mine; diameter of mine small.
One caterpillar to an apple.	One caterpillar to an apple (a larger apple may have more than one).	Several or many caterpillars to an apple.

The Apple Maggot.—In the United States and Canada there is a destructive enemy of the apple, the larva of a fly named *Rhagoletis pomonella.* This is one of the pests scheduled by the Ministry of Agriculture and the Board of Agriculture for Scotland.

R. pomonella lays eggs in punctures on the skin of the apple. The result is a number of pits or dimples that spoil the appearance of the fruit. The maggots tunnel in the fruit. The Apple Maggot is easy to tell from the three apple caterpillars named above. It is legless, smooth, and white, and measures when full grown just over ¼-inch; front end pointed and carrying two very small mouth-hooks; hind end thicker and blunt; the first joint of the body bears two spiracles, visible only on magnification; on the hind face of the last joint dark-coloured spiracles are present.

ARSENIC AND APPLES.

As the result of the conviction of a seller of apples because arsenical poisoning had followed the eating of the apples, something of a scare took place, and in December the Ministry of Health sent a circular to Local and Port Sanitary Authorities calling attention to the fact that on certain imported apples arsenic had been found adhering to the surface of the apple. Letters and reports of analyses of suspected apples appeared in many newspapers, and the sale of all apples was to some extent prejudiced.

The Ministry of Health notice was justifiable because of the poisonous nature of arsenic, but it is easy to exaggerate the danger. In the war against insect enemies of the apple the use of an arsenical spray has been for long, in most apple-growing countries—including our own,—a regular part of the culture operations of the year. In our own country there has always been some suspicion of and a dislike to arsenical sprays, but since arsenate of lead came to replace the earlier use of Paris Green, arsenical spraying has been commoner.

Arsenical sprays as a means of fighting injurious insects have been in use for a number of years, and their use is now world-wide. Their service is against insects—insects in the caterpillar stage especially—that take solid food by biting jaws; the poison is swallowed with the food, and acts as a stomach poison. The best known of these arsenical poisons are Paris Green and arsenate of lead.

Recently arsenate of lime has come into prominence in Canada as an insecticidal dust in combination with a contact insecticide or with a fungicide. For example, the copper-arsenic dust used in the United States and in Canada is effective against both insect and fungus enemies of the apple. This copper - arsenic dust is made up of hydrated lime, finely ground copper sulphate, and calcium arsenate, or dehydrated copper sulphate and calcium arsenate

The method of applying insecticides or fungicides may be by a wet spray, or by dry dusting when the dew is on the plants and there is no wind, the dusting being done by means of hand or dust-guns, or even, as in America and South Africa, by aeroplane when the area to be covered is wide.

How important and necessary the fight against insects is may be gathered from the fact that, on account of apple enemies alone, there is an annual loss in the United States of £2,000,000 to £4,000,000. There are five or six moths in Britain whose caterpillars are enemies of the apple-tree, and are controlled by arsenicals. Only one of them is a regular enemy of the fruit—viz., the caterpillar of the Codling Moth. The Codling Moth (Fig. 36)—easily spread in the caterpillar and pupal stages in commerce—is now cosmopolitan, and in practically every country in the world where apples are grown in quantity, one of the control measures is by spraying with arsenate of lead. The moths are found in flight in Britain in late May and June. They fly at dusk, and rest in the daytime on the tree. The females lay their flat, scale-like eggs, on the young fruit or on leaf or twig. In about a fortnight the eggs hatch, and the young caterpillar crawls to a fruit, enters as a rule at the "eye" or calyx end, and proceeds to eat its way to the centre, where it completes its feeding and growth in a month. The full-fed caterpillar eats its way out of the apple, leaving as a rule by the side, and, having found a shelter place—*e.g.*, a crack or crevice in the bark of the stem,—it spins a silken cocoon. The winter is passed in the cocoon, pupation follows in the next spring, and the moths appear in May or June.

From this life-history it will be clear that if arsenical spraying is one of the control measures, it must be done before the caterpillar gets into the apple. The time to use the arsenate of lead spray is just after the blossom falls, within the next week or ten days, before contraction of the parts closes the " eye " of the apple. The arsenate of lead is intended to reach the calyx cup before this contraction, and the young caterpillar, attempting entry to the apple here, is poisoned (the arsenate of lead spray is not used while the trees are in blossom, else the bees, so useful in pollination, would be poisoned). Long before the apples are harvested rain will have washed them, rendering them fit for use without danger of poisoning.

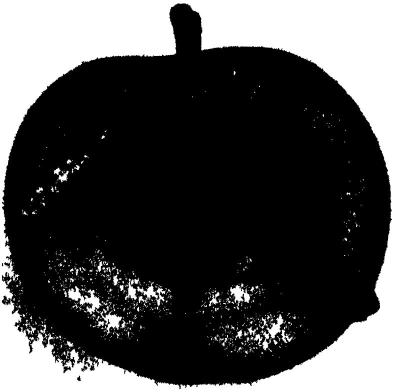

Fig. 38.—*Apple showing work of caterpillar of Codling Moth.*

From a model in my collection.

It sometimes happens that in Britain some moths may appear as a second brood in autumn, and this is the common thing in warm countries. In countries where more broods than one, of the Codling Moth, are found in the year, there is, of course, the necessity for additional spraying, and where there is little rain and especially if other caterpillar enemies are aimed at in the arsenical spraying, the risk of the lodging of arsenic is greater; in such cases the washing and peeling of the apples previous to use should render them quite safe

There is certainly no need for panic. In the majority of analyses made, the arsenic found has been in such minute quantities that from a pound to several pounds of apples would need to have been eaten, skin and all, to cause serious results from the arsenic. Tens of thousands of bushels of apples, arsenically sprayed, have been eaten for years without evil results. The United States Department of Agriculture intimates that of 68,000,000 bushels of apples consumed, only 10 per cent were exported, and no cases of illness were reported. The Canadian Department of Agriculture, after conducting experiments, is satisfied that Canadian apples are absolutely non-poisonous.

It would be a pity if an arsenic scare were to prejudice the import and sale of apples. There is no real ground for public alarm. That the Ministry of Health has called attention to the matter will result in greater care being taken; indeed, importers have already intimated to the Ministry their intention to do what is possible to remove contamination. The notes in the public press will stimulate research and experiment, and probably some new work will be directed to the possibility of a more permanent union of traces of arsenic with the outer skin of the apple than hitherto has been suspected, and also to the unlikely possibility of the flesh of the apple becoming contaminated.

THE VAPOURER MOTH (*Orgyia antiqua*).

This moth, unlike most moths, flies by day, with an active, whirling, jerky, zigzag flight that has suggested to some the "escape of steam from the spout of a kettle," hence the name Vapourer Moth. Found all over our own country and well known in Europe, this moth was probably introduced into the United States in the egg stage, egg clusters having been found attached to imported fruit-trees. The species has spread in the north United States from the Atlantic coast to the Pacific coast, and also up into Canada. During the past summer the caterpillars were very common in Britain. I saw tens of thousands at work in summer and early autumn in the London parks, and from Perthshire in late August inquiries reached me concerning their damage to heather, the inquiries being accompanied by eggs, caterpillars, pupæ, and adults. A patch of heather, on a moor extending to about an acre, was badly damaged by the caterpillars, which, in this Perthshire case, were not observed on any other plant but the heather. The difference in habitat between city (the moth is not infrequently seen in London streets and squares) and London parks and moorland is interesting.

The caterpillars feed on the leafage of many different kinds of trees, including conifers, and on fruit and garden plants, as well as on such plants as heather and blaeberry.

The male and female moths look very different. The active male has a wing-spread of 1 inch to 1½ inches ; body brown ; wings ochreous red or chestnut brown, there is a somewhat crescent-shaped white spot near the hind angle of each front wing. The female is yellow-grey or smoky-grey, plump and hairy, and unable to fly, the wings being reduced to mere stumps (Fig 39).

Fig 39 —*Female Vapourer Moth laying eggs on outside of cocoon the cocoon is one of a cluster The cocoons are on heather.*

From nature Magnified

The eggs are globe-like and flattened at one side, the general colour of the egg is white (when newly laid) or pale yellow, with a brownish ring surrounding the flattened area, whose centre has a disc-like brown depression.

The caterpillar (Fig. 40) is very hairy; long light-coloured hairs spring from reddish warts all down each side of the body; conspicuous are two dark-coloured feathery tufts springing from behind the head and pointing over it; tufts also project, one from each side of joint five; four brush-like tufts of yellow or brownish hairs stand up on the back; a long slender tuft projects at the tail-end. The underside of caterpillar is yellowish. The caterpillar has sixteen legs.

The pupa (Fig. 41) is dark brown and rather glossy, and lies surrounded by a greyish cocoon, interwoven with which are some of the caterpillar hairs.

Life-history.—The female, moving little, lays her eggs in a batch on the outside of her old cocoon or close to it (Fig. 42).

Fig 40.—*Caterpillar of Vapourer Moth.*

From nature Twice magnified

Three hundred to four hundred eggs may be laid by one female. Soon after hatching, the young caterpillars scatter over the tree or other plant; they may be in such numbers that complete defoliation takes place. The full-fed caterpillars proceed to spin their cocoons, which are fastened to leaves or branches or in crevices in the bark or in convenient shelter-places near at hand. While the cracks in the bark of trees on which the caterpillars have been feeding are commonly used, some overhanging shelter is preferred if reachable. I have taken the cocoons in hundreds, in the south, under projecting ironwork on lamp-posts, and under cover of the flattened out ornamental tops of iron pillars used as supports for handrails. The length of the pupal stage is three weeks.

There is some confusion regarding the number of generations in a year, and the fact that all stages—adult, egg, young, middle-sized and full-sized caterpillars, cocoons with pupæ—

can be found at one and the same time has been explained on the ground that from the same batch of eggs some of the eggs may hatch in a fortnight or three weeks, while others remain unhatched over the winter. During the past season I had opportunities of observing the Vapourer Moth from the beginning of July onwards, and from my notes I take the following: "Material collected in the south yielded male and female moths on 6th and 7th July. Further material gave moths of both sexes on 7th August and later to 15th August. Heather from Perthshire with cocoons on it yielded adult moths from 28th August to 1st September and later. Eggs were being laid on 6th and 7th August, quite a number of newly issued females being busy laying. Masses of eggs were found on heather from Perthshire on 28th August, and many eggs were still being laid into September. From the beginning of July onwards, to the autumn, caterpillars were got. These abounded (many thousands) on the trees in

Fig 41 —*Cluster of cocoons of Vapourer Moth with the pupa revealed.*

From nature Twice magnified

London at my first observations at the beginning of July and on to 13th July, when I had to leave. Examination renewed at the end of the first week of August again showed caterpillars, though in greatly reduced numbers; these to a great extent were seeking shelter places in which to spin up. In Perthshire many caterpillars on the heather on 24th August, some full grown and others not full grown."

Allowing for differences in season and in climate, the following statement might stand for what is possible in temperate Europe in a favourable year:—

Fig 42 —*Egg clusters of Vapourer Moth on outside of cocoons*
From nature Natural size

August and September 1925—Moths.
August and September 1925—Eggs.
May 1926—Eggs hatch.
May and June 1926—Caterpillars.
June 1926—Pupæ.
End of June and July 1926—Moths.
July 1926—Eggs.
July and August 1926—Caterpillars.
August and September 1926—Moths.

This would give two generations in a calendar year.

Treatment.—Destroy the cocoons, which, in such shelter places as have been indicated above, are often many together in a web. Destroy the egg clusters.

Spraying with arsenate of lead when this is practicable (with shrubs and low plants) will poison the feeding caterpillars. The younger the caterpillars at the time of spraying, the more effective the arsenate of lead. Formula—1 lb. lead arsenate, 20 gallons water.

As the females cannot fly, spread of the insect is in the caterpillar stage. If care be taken, therefore, to attack the insect in the beginning, the control of the pest is not difficult. Nature helps in the control, not so much by birds, which do not readily take hairy caterpillars, but by insect parasites, which help considerably in checking the multiplication of the Vapourer Moth. I bred from caterpillars collected in the south the following: *Pimpla instigator*, *Apanteles solitarius*, *Pteromalus sp.*, *Hemiteles arcator*, and *Dibrachys cavus*. The parasites were named by Dr Waterston of the Natural History Museum, South Kensington, to whom my thanks are due. These parasites lay their eggs on or in their host, and the larvæ on hatching feed externally or internally on the host, which perishes in consequence.

The five insects named (they have no common names) are hymenopterous, and belong to the parasitic families the Ichneumonids, the Braconids, the Chalcids. It is not enough to say that these insects are parasites. One must know whether the parasite is parasitic on the Vapourer Moth larva or pupa, when they are known as primary parasites, or whether the parasite is a secondary or hyper-parasite—*i.e.*, parasitic on the parasite of the Vapourer Moth. Now of the above, *P. instigator* is primary (it is a primary parasite of several other troublesome forest, agricultural, and fruit-infesting caterpillars). *A. solitarius* is also primary. *Pteromalus* is probably primary, but the other two are secondary; *Dibrachys cavus* at any rate is certainly secondary.

I collected in the south a large number of the cocoons of *A. solitarius*, these cocoons being near and among the caterpillars and cocoons of the Vapourer Moth. Sixty-three *Apanteles* cocoons were dissected and examined under the microscope, and only eleven of them held unparasitised *Apanteles*. The other fifty-two contained *D. cavus* in one stage or another, *Apanteles* having been destroyed. These fifty-two parasitised *Apanteles* cocoons yielded 142 *D. cavus* parasites—that is to say, over 82 per cent of the useful primary parasite *Apanteles* had been wiped out by the secondary parasite *Dibrachys*.

This interrelationship between plant and insect, and insect and insect, is full of interest. For example, some species of *Dibrachys* can play a double rôle with regard to the same kind of insect parasitised. Thus the Vine Moth (*Polychrosis botrana*) is parasitised in the caterpillar stage by *Dibrachys affinis*, which acts as a primary parasite, and is therefore a beneficial insect to the vine grower. Another primary parasite of the Vine Moth caterpillar, and therefore beneficial, is a Tachinid fly. But with one of these curious shifts in the struggle for existence, *Dibrachys affinis* is parasitic on the Tachinid, and is thereby harmful to the vine grower. *Apanteles glomeratus*, so useful as a parasite on the caterpillars of the Large Cabbage White Butterfly, has more than twenty hymenopterous parasitic enemies of its own. Such is the web of life.

THE MAGPIE MOTH (*Abraxas grossulariata*).

The past year was a bad one for Magpie Moth, numerous complaints being received of the damage to gooseberry and currant. Gooseberry is well known to be the favourite food plant, and black-currant is preferred to red-currant. The caterpillars are more destructive in gardens than in large orchards, but Rosaceous fruit-trees like apricot and plum are among the food plants, and damage has been reported on blackthorn, hazel, and euonymus. In the past summer one of my correspondents found the caterpillars feeding on the leaves of couch grass which chanced to be growing under infested gooseberry bushes; another correspondent found the caterpillars on the leaves of elder.

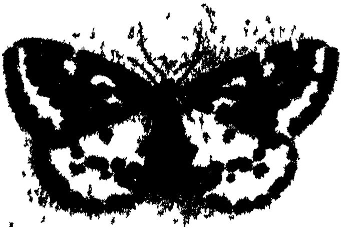

Fig 43.—*The Magpie Moth*

From nature Natural size

Fig 44 —*Caterpillar of Magpie Moth*

From nature Natural size

The black-and-white-and-yellow moth is well known, and will be recognised from the figure (Fig. 43). The caterpillar is a looper or measurer, with ten legs; it is cream-coloured, with a row of squarish, black, velvety spots down the middle of the back (Figs. 44 and 46); the spiracular line is reddish-orange, with rows of black spots both above and below it; spiracles black; head black, with a few hairs. There are three pairs of thoracic legs, black in colour, and only two pairs of abdominal or prolegs, one of these pairs being borne by the very last joint. The full-grown caterpillar measures 1½ inches.

The pupa is shining black, with three complete yellow rings, and others incomplete; a very slight cocoon surrounds the pupa (Fig. 45).

Life-history.—The moths are found in flight in July and August. Eggs are laid on the leaves of the food plant. These hatch in a fortnight, and the caterpillars feed till autumn, but they are small and only partly grown when the change of the season sends them into winter quarters. All through late autumn and winter the young caterpillars lie sheltered in fallen leaves spun together, or in the soil or soil litter under or adjoining the food plant, or in such moss or lichen as may be on the bushes, or, in the case of bushes against walls, in cracks in the walls. In the next spring the partly grown caterpillars come out from their winter quarters as the food plants are coming into leaf, and it is now, by destruction of foliage, that they do their worst work, for the plant, deprived of feeding organs on whose activity fruit formation depends, is still further weakened by the drain on it in having to furnish a second set of leaves, which may also be destroyed.

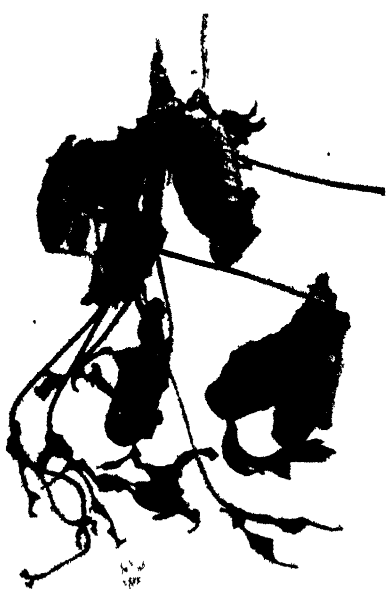

Fig. 45.—*Pupa of Magpie Moth.*

From nature. Natural size.

The full-fed caterpillar weaves its slight cocoon and enters the pupal stage. The cocoons with their enclosed pupæ are found on the food plant hanging from leaf or branch (Fig. 45), or on fences near at hand or walls. By a month the adults have issued.

Control.—Destroy the young caterpillars in the autumn with an arsenate of lead spray, 1 lb. arsenate of lead paste to 20 gallons of water, care being taken to reach the undersides of the leaves. Examine the bushes after leaf-fall, and collect any loose leaves remaining, as they may be sheltering the wintering caterpillars.

Careful outlook should be kept for the appearance of the caterpillars on the plants in spring, so that they may be hand picked (on a garden scale), or poisoned by an arsenate of lead spray. This spraying should be done as soon as the leaves have expanded, and before the flowers have exposed themselves for insect visit; otherwise bees visiting the flowers will be poisoned. It is because the time available for the spring arsenate of lead spray is so restricted that another spray—viz., Hellebore powder, 2 lb.; soft soap, 1 lb.; water, 10 gallons—has been recommended. Hellebore, although poisonous, quickly loses, in a spray, its poisonous properties. Sometimes when the young fruits have started, an arsenate of lead spray is used, but there is risk from poisoning of the fruit. The Hellebore spray may be safely used any time up to a month before the picking of the berries.

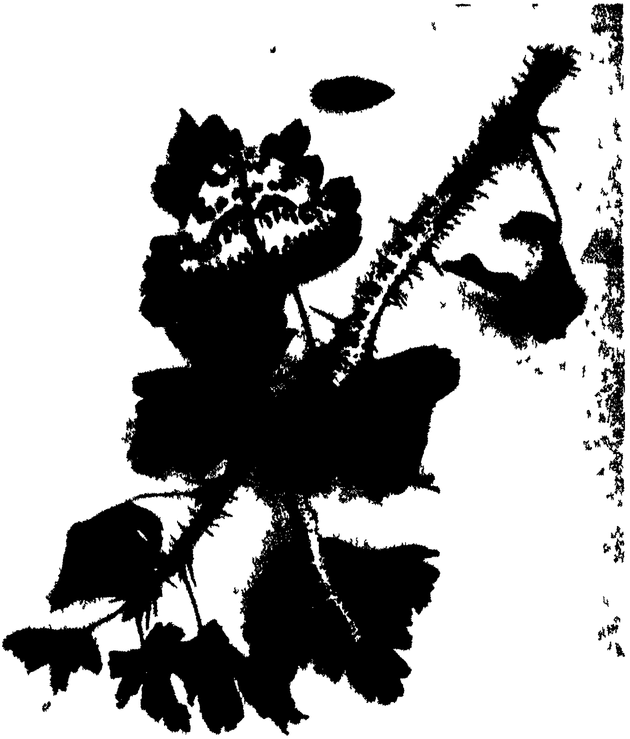

Fig 46.—*The Magpie Moth, Caterpillar and Pupa*

From a preparation in my collection Reduced

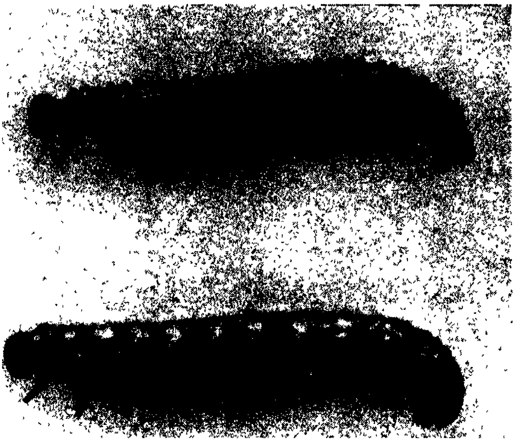

Fig. 47.—*Caterpillar of the Gooseberry and Currant Sawfly.*

The upper figure shows the Caterpillar in the "spotted" stage; the lower figure is that of the Caterpillar in its final stage. From nature. Magnified 3½ times.

Fig. 48.—*Leaf with eggs of Gooseberry and Currant Sawfly.*

From nature. Magnified.

THE GOOSEBERRY SAWFLY (*Nematus ribesii*).

Another common gooseberry enemy is the Gooseberry Sawfly, sometimes confused in the caterpillar stage with the Magpie Moth. It is important to distinguish the two enemies, as the life-history and habits of the two insects are so different. A careful naked-eye examination of the caterpillars will show how different these are. The Gooseberry Sawfly caterpillar (Fig. 47) has twenty legs. In its earliest stage the head is black and the body greenish-white, with a dark dot here and there. After a moult the head is still black, but the body is green, dotted all over with dark spots. In the almost full-grown caterpillar the head is pale, the body is pale green, except in front and behind, where it is orange-coloured, and there are no black dots. This sawfly lays her eggs on the underside of the leaves of gooseberry and currant (Fig. 48).

The Gooseberry Sawfly has several generations in the year, so that the attack becomes progressively worse as the season goes on. The winter is passed in the cocoon stage in the surface layers of the soil underneath the food plants.

ENARMONIA DINIANA GN. (*pinicolana*, L.)
(Figs. 49, 50, 51, 52.)

Fig. 49.—Enarmonia diniana. From nature. Magnified.

In the 'Transactions' for 1922 I described in some detail the attack of the caterpillars of the above-named moth on a young Scots Pine plantation, and in the course of the account it was mentioned that on the Continent the common host plant was Larch. It is interesting, therefore, to record another onset of the caterpillars, where once more Scots Pine is the host. The complaint came from Lanarkshire, in summer. Damage was done to about fifty trees, the small stunted remnant of a wood that had been destroyed by fire many years earlier. Inspection failed to reveal attack on any other tree save on one Scots Pine between fifty and sixty years of age, and distant a mile from the main damaged area. The attacked pines showed, as the season advanced, the same symptoms of recovery as described in the 1921 infestation. Till August, and before the rain came, the terminal shoots and the first whorls of branches "seemed as if they were all glued together" (by the silken

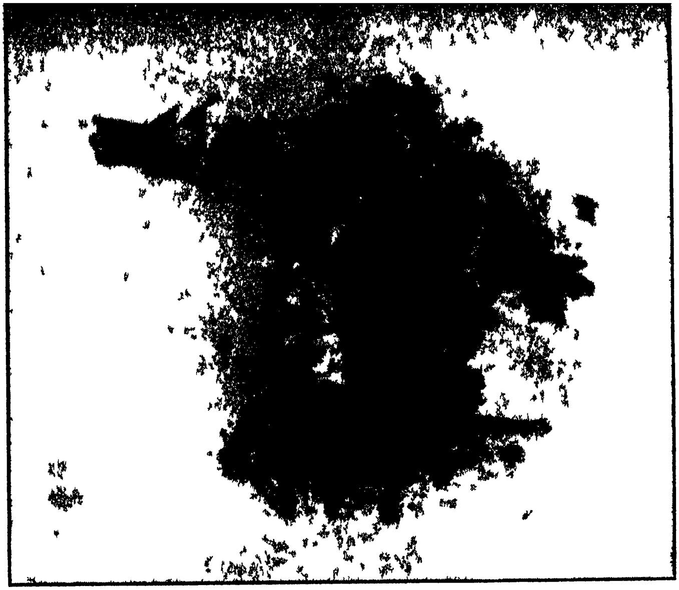

Fig 50 *Pupa of* Enarmonia diniana *on pine shoot The silky covering has been pushed to each side to expose the pupa Pellets of caterpillar excrement are seen all round about*

From nature Magnified about 4 times

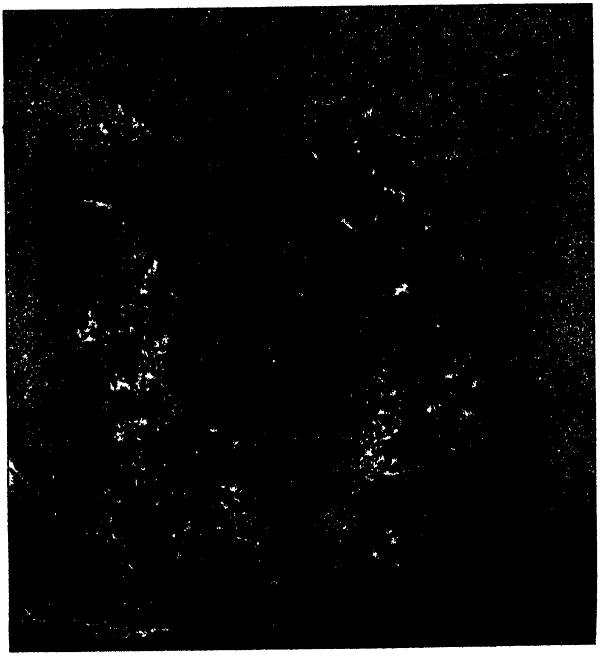

Fig. 51 —*Tips of Scots Pine to show the binding of the shoots together and the excremental pellets of caterpillars of* Enarmonia diniana

From nature Reduced

threads of the caterpillars); but rain and genial weather in August resulted in many cases in the separation of the shoots and progressive improvement, the caterpillars having completed their feeding and proceeded to pupation.

Fig. 52.—*Branch of young Scots Pine showing curvature of shoot as result of attack by the caterpillars of* Enarmonia diniana. *Pellets of excrement are also seen.*

From nature. Natural size.

THE PEA MOTH (*Cydia nigricana*).

A large sample of spoiled peas (Fig. 53) came from Lanarkshire with request for name of enemy. Examination revealed the small caterpillars of the Pea Moth. In past years I have had specimens of this damage from the south, but it is the first time complaints have reached me from Scotland, although the moth is found up to Perthshire. It is one of our smaller moths, measuring ½ to ⅝ inch in wing expanse. The front wings are glossy dark brown to black, with white streaks at the fore edge; a curved white streak shows near the hind edge about the middle of the wing; the fringes of the front wings with the colour of the wings. The hind wings are brown with white fringes.

The caterpillar is pale green or yellowish-white, with a dark head; the joint behind the head has on its upper surface a horny plate; here and there over the surface of the skin are dark dots or warts, each carrying a bristle; legs, sixteen.

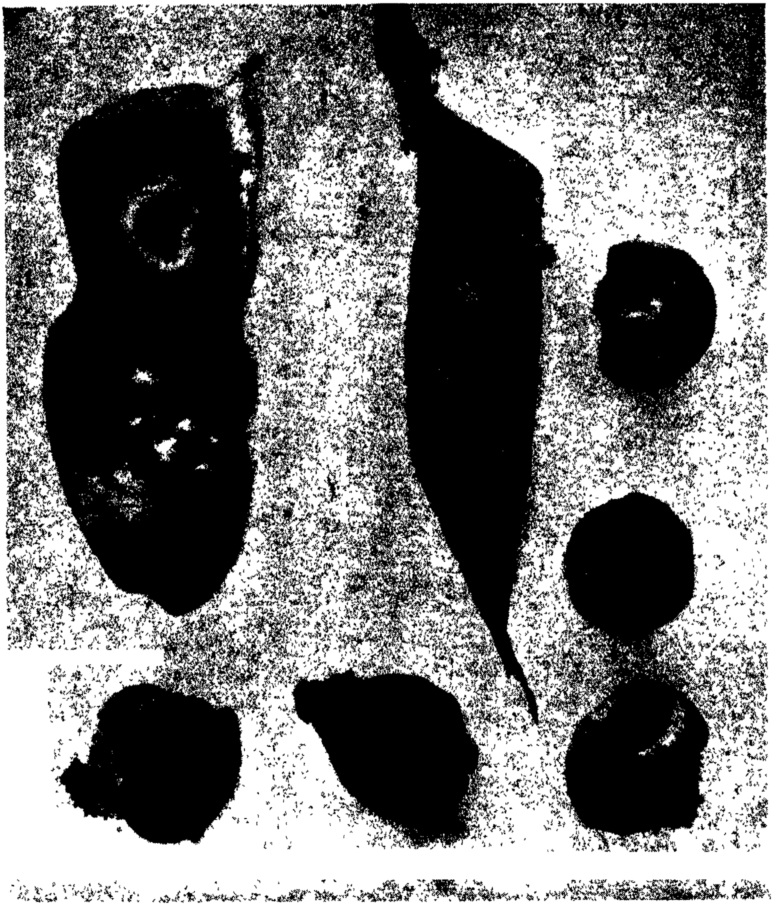

Fig. 53.—*Pea Pods and Peas damaged by the caterpillars of the Pea Moth.*

Life-history.—The moths are found flying from June to August. The females may lay their eggs on the young pods, but W. H. Brittain[1] in Nova Scotia found them to be invariably laid on the sepals, sometimes singly, sometimes two side by side. The caterpillar on hatching enters the pod, and makes its way to the peas, which are gnawed and spoiled. When full grown the caterpillar leaves the pod and enters the soil, where, surrounded by a cocoon, it passes the winter. Pupation takes place the following late spring or early summer.

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[1] 'Proceedings of the Entomological Society of Nova Scotia,' 1919.

A thorough hoeing or discing after the land has been cleared of peas would expose and kill caterpillars. After attack plough deeply before winter, so as to bury the cocoons deep enough to make it impossible for any moths to reach the surface.

THE CINNABAR MOTH (*Hipocrita jacobææ*, L.)

On several occasions in July and August the caterpillars of the Cinnabar Moth were received. Both moth and caterpillar are very easy to recognise. No other British moth can be confused with this one. The moth's common name refers to the colour of the hind wings, which are vermilion or carmine; the front wings are greyish-brown, with a crimsoned carmine stripe close to and parallel with the front border, and with four round spots of the same colour. The head, thorax, and abdomen are black. The moths fly in June and July.

Fig 54 —*Caterpillar of Cinnabar Moth on Ragwort.*

From nature

The caterpillar is orange-yellow, with a broad, black or purplish-black ring on each joint; here and there over the body are a few black hairs (Fig. 54). The caterpillars are found in July and August — last summer they were very abundant in some places—and feed on ragwort and groundsel. The dark-brown pupæ lie in the surface layers of the soil, surrounded by a slight cocoon. The pupal stage lasts from August till the next June.

The Gold Spot and the Silver-Y Moth.

Two Gold Spot moths (*Plusia festucæ*), a male and a female, came in June. They were taken in copula in a garden in Edinburgh. In August in East Lothian this species came to baits of treacle on several nights when some young people were being given a demonstration of "sugaring" or "treacling" as a method of trapping moths for a collection. The caterpillar of this species feeds on various grasses in May and June and July.

More important from the economic aspect was another moth that came to the "treacle" baits—viz., the Silver-Y Moth (*Plusia gamma*). The caterpillars of this moth are general feeders on cruciferous, leguminous, composite, and other orders of plants. The *Plusia* caterpillars, though of the family Noctuidæ, where the legs are usually sixteen, are characterised by the presence of only twelve legs—*e.g.*, the caterpillar of *Plusia gamma* has a pair of legs on joints 1, 2, 3, 8, 9, 12; the body tapers to the head end, and is slightly humped on the eleventh joint; colour apple-green, with six narrow, longitudinal, wavy, whitish or yellowish lines; spiracular line yellowish; spiracles white or yellow-white, with dark edges. Between the longitudinal lines a number of white dots are seen, each carrying a bristle; head yellow-green, dark at the sides; thoracic legs tipped with red; abdominal or prolegs green.

Hawk Moths.

The wonderful Hawk Moths, family Sphingidæ, noted for their beauty, their size, and their great powers of flight, are not often seen in flight, partly because they are twilight or night fliers (the Humming Bird Hawk Moths fly by day), and partly because they do not habitually come to light or to baits of sugar. The Sphinx caterpillars are also striking in their own way. As far as Britain is concerned, the family is almost without economic importance. Several times I have recorded the Death's Head Moth in the 'Transactions,' and once, in the 'Transactions' of 1923, a short note was given on the Poplar Hawk Moth and the Small Elephant Hawk Moth. Two other distinctly interesting species were found this autumn by two of my correspondents, more or less accidentally—viz., the Convolvulus Hawk Moth (*Sphinx convolvuli*), sent from near Dirleton by Mr Simpson; and the Silver-striped Hawk Moth, sent from Kinlocheil by Mr Duncan Stewart.

The Convolvulus Hawk Moth is a splendid creature, with a wing expanse of up to 5 inches, and a proboscis of 3 inches in length. The long proboscis suggests that the moth is a visitant to tube-shaped flowers. These are visited for their *nectar, the proboscis, which, when not in use, is carried coiled up like a watch-spring, being unwound and thrust* down the tube of the flower. A distinct humming note is heard as the moth flies, the sound being due to the very rapid vibration of the wings. This moth, though in a sense rare in our country, has yet been recorded from Cornwall to Sutherland. The great majority of the recorded specimens have not been reared in Britain, but have, in years when the species has been abundant on the continent of Europe, been immigrants. The flight over the North Sea or the English Channel presents no difficulty to the Convolvulus Hawk Moth. In the daytime the moth rests on plants or palings or fence-posts.

The caterpillar, green or yellow-brown, has seven oblique side-stripes, yellow in colour, and also a dark or yellow horn projecting from the upper surface of the second last joint. It feeds on field bindweed.

The Silver-striped Hawk Moth.—Concerning this species, which has a wide distribution outside of the British Isles, it may also be said that, while some specimens may be British bred, the majority recorded are immigrants, for this moth also is a fine flier, to which the Channel is no barrier. Mr Stewart, in sending me the specimen for identification, gave me the following details: "The moth was captured at Kinlocheil on the north shore of Loch Eil on 19th September. While sitting reading my paper in the evening of 18th September I was conscious of something flying around the ceiling. The moth gave out sounds of a humming nature. I closed the window, which was open from the top, and, armed with a long-handled brush, tried to capture the moth, but it seemed to show intelligence in evading me. At last the moth took refuge on the top of a press, and did not come out of its hiding-place any more that evening. Next evening when the lamp was lit the moth appeared again, and this time, by means of the brush, the moth was knocked on to a newspaper and promptly covered with a glass. On 26th September the moth was transferred to a tobacco-box and carried to Edinburgh. While sitting alone one night in my room (28th September) I was conscious of a peculiar noise or squeak, suggesting that of a mouse. Rising to ascertain the cause, I found that the noise came from the prisoner in the tobacco-box."

Concerning the noise, it may be stated that live insects of different Orders give rise to noises when confined in small spaces, the noise, suggesting a scratching or scraping, being due to the ordinary movements of the insect. Sphingid moths, however, give off a distinct hum, due to the rapid vibration of their wings; and some of the larger ones—*e.g.*, the Death's Head Moth—give a squeaking noise, due to the rubbing of the proboscis against two projecting labial palps.

DIASTROPHUS RUBI.

The long galls due to this insect were sent to me for determination from two sources. D. rubi is a hymenopterous insect. The female pricks, in her egg-laying, the stem of a bramble or a raspberry, and the result is a several inch-long many-chambered gall (the galls may be shorter). The gall is sometimes curved. Each chamber contains a legless larva, which when full fed pupates in the gall, and the adults emerge in due course. The gall is green at first, but later turns brown. Little raised areas may show all over the surface of the gall, each such roughness marking the place of a larva. The galls are common all over the country, and as far as harm goes may be neglected.

THE YELLOW DUNG FLY (*Scatophaga stercoraria*).

In reply to repeated questions, I give a few notes on this common fly, whose carnivorous habits have been commented on by the late Professor H. M. Lefroy, and the life-history worked out by G. S. Cotterell.[1] The flies, with their yellowish wings and their yellow or yellow-green abdomen, are well known by sight to people in the country. They vary greatly in size from $\frac{3}{5}$-inch down to almost half that, the variation being due to the conditions, the chief of which are temperature and the condition of the dung (dry or moist) in which the flies are bred.

The flies may be found all the year round—the winter is passed as a rule in the adult stage,—and they breed from April to September or October, four or five generations succeeding one another in this period.

After pairing, the females lay their eggs in any kind of dung, fresh dung of cattle and sheep being the favourite. Over a hundred eggs at least can be laid by a single female. The minute eggs have each two little projections at the front end, one on each side of the little pore in the shell by which the sperm enters at the time of pairing. The wing-like projections serve to support the egg in the dung. By two days the eggs have hatched, the larva being a maggot which, in the course of its life, moults twice, thus mapping the larval life out into three stages. The maggot in its last stage has a pointed head end provided with mouth hooks and a series of succeeding joints, the hind ones being the largest. The hind end is blunt, and on its hind face are two spiracles, each surrounded by a horny ring and having three slits for the entrance of air, the slits being protected by minute hairs. There is another pair of spiracles at the front end, on the second joint, but the hind spiracles are the more important, and when the dung is rather liquid and there is a risk of the maggot being submerged, these hind breathing pores are kept above the surface. The maggot is most favoured when the dung is not dry nor yet too moist. The maggots tunnel into the dung, on which they feed; minute channels at the front end radiate towards the mouth, to which the food is thus conveyed. The maggot stage lasts, on an average, less than a fortnight. The full-grown maggot generally leaves the dung and enters the soil, where it pupates; the pupal stage lasts about a fortnight. Cotterell found that the complete life-cycle from adult to adult was completed in from seventeen days—the shortest time—to thirty-one days—the longest time. The flies on appearing from the pupal cases are not able to proceed to an efficient copulation; about three weeks are first spent in feeding, during which time the reproductive organs are ripening. This means that in the farming part of the year, April or May to October, there can be a new generation every six or seven weeks.

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[1] "The Life-history and Habits of *Scatophaga stercoraria*," by G. S. Cotterell, with a Preface by Professor Maxwell Lefroy. 'Proceedings of the Zoological Society of London,' Part IV. Dec. 1920.

The adult flies are carnivorous in diet. They seize other flies just as these are settling, and pierce the neck of the prey from one side to the other by means of the proboscis. The Dung Fly then proceeds to puncture and suck out, in turn, the contents of thorax, head, and abdomen of the paralysed prey. The two lobes at the tip of the proboscis of the Dung Fly are capable of rasping, and so the internal tissues of the prey are broken down, and partly brought into solution by a copious flood of saliva, previous to being sucked up.

Watched in the open fields, the chief prey of the Dung Fly was *Borborus equinus*, another small dung-visiting fly; but bluebottles and greenbottles and house-flies were all taken. In Cotterell's indoor experiments the prey offered the Dung Fly was the common house-fly (*Musca domestica*), of which the Dung Fly killed and sucked a dozen a day.

THE GREEN SPRUCE APHIS (*Myzaphis abietina*).—Walker.

This Aphis has been known since 1846. Theobald,[1] who has known it for a number of years in the south of England, described its presence in numbers in 1913 on Spruce, when the trees suffered greatly, and since this date considerably more attention has been given to this troublesome insect. During the past season the species was sent to me, with inquiries, from Berwickshire.

The Aphis is bright green in colour, with a dark line or dark spots along each side of the body. There is, in all stages of the insect, a prominence or projection on each side of the head at the base of the antennæ. Long cornicles are also present.

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[1] "The Green Spruce Aphis," by F. V. Theobald. 'Annals of Applied Biology,' 1914-15.

Life-history.—This Aphis is found in two adult forms—the wingless viviparous female, and the winged viviparous female. No males have been seen. The multiplication is non-sexual, there being no stage in which fertilisation of eggs takes place.

The winter is passed chiefly in the wingless viviparous stage. These virgin females produce live young. Even in very mild winters a few young may be produced, but the multiplication is more rapid in the warmer parts of the year. At varying times in the year winged viviparous females appear, and these also produce live young.

Cunliffe,[1] who has conducted a series of experiments with this Aphis, has described the method of the birth of the young on the Spruce leaves. The young are produced hind end first, the legs, antennæ, and beak all close to the body and pointing backwards. Attached to the posterior end of the young form is a tiny pad of sticky material. The mother depresses the tip of her abdomen, and the sticky pad adhering to the Spruce needle, the mother so frees herself, and the newly born Aphis finds a foothold. The mother gives birth to, on an average, one young one, a day, for a fortnight; the length of the mother's adult life is between a fortnight and three weeks. The young feed and grow and moult, becoming themselves full grown and capable of producing live young in just over a fortnight, in favourable environment. A longer time is taken according to the temperature. Cunliffe in his experiments found that young which developed into wingless viviparous females moulted four times before reaching maturity, and young which matured into winged viviparous females moulted five times. During the development from the young stage to the adult, external changes show in the antennæ, beak, and legs.

Food Plant.—The host plant is the Spruce (*Picea*), on at least fourteen species of which the Green Spruce Aphis has been recorded. Among these the Norway Spruce and the Sitka Spruce claim our special notice. The Aphis works both on nursery plants and in plantations.

Theobald has taken the Green Spruce Aphis on Scots Pine and on Weymouth Pine, and there is a German record of attack on Silver Fir. The presence of the Aphis on Pine and Silver Fir may have been accidental or exceptional. Cunliffe experimentally placed young and adult Green Spruce Aphids on various Pines, Silver Fir, Larches, and Douglas Fir in natural conditions, but in no case with successful results.

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[1] "Notes on the Biology and Structure of *Myzaphis abietina*," by N. Cunliffe. 'Quarterly Journal of Forestry,' 1924.

The Aphids feed chiefly on needles older than those of the current year. Yellowish spots on the needles mark the places where the Aphids have been sucking (young shoots are sometimes, but rarely, sucked). In severe infestation the Sitka Spruce sheds all its leaves. In Norway Spruce, however, the leaves become brown, but the majority remain a long time on the tree.

Control.—The best means may be cultural control. Intensive work on the Green Spruce Aphis and on the environment favourable or unfavourable to Sitka and other kinds of Spruce may prove that the Green Spruce Aphis need only be feared when the host plant is unhealthy or being grown in unfavourable environment. This is not at all unlikely, for with Theobald's knowledge of the Green Spruce Aphis over a number of years it was an exception for harm to be reported. Further, Cunliffe quotes cases where Sitka Spruce infested by Green Spruce Aphids showed all the signs of damage, while other Sitka Spruce, thriving in a favourable environment not far away, gave little or no unfavourable response, although the Green Spruce Aphis was equally abundant on them.

Some years ago Steven advised, against another kind of Aphis, fumigation of young stock before planting out. This would be a good measure against the Green Spruce Aphis. While the plants are still small, a contact spray, *e.g.*, nicotine and soft soap, is practicable and would be effective.

Among natural means of control is that by the Long-eared Bat. Theobald,[1] finding these bats flying round, and clinging to, the top branches of a tree, in July, shot one of the bats. On dissection the bat yielded "hundreds and hundreds of *Aphis abietina*, not only winged but wingless adults and young forms, the wingless and young having been taken from the needles."

THE LESSER GRAIN BORER (*Rhizopertha dominica*).—Fab.

Half a stone of haricot beans—a portion of a large consignment—bought for food purposes, were submitted for examination and report. While being prepared for table it was noticed that many of the beans were tunnelled, and some contained dead insects, which on examination proved to be beetles (true beetles, not cockroaches—cockroaches are called black beetles, but they are not black, neither are they beetles) named *Rhizopertha dominica*.

The Lesser Grain Beetle is one of the smallest of the beetles which infest grain and stored products. It measures only about $\frac{1}{8}$ inch in length and $\frac{1}{12}$-inch in breadth. In colour it is dark brown. When examined with a good lens certain characteristic features are revealed—viz., the ten-jointed antennæ, the end three joints of which form a very distinct club; the way in which the head is turned down under the thorax (the beetle has been called the Capuchin from the way in which the head is covered by the hood-like prothorax); the strong jaws. This insect is harmful both as adult and as grub (Fig. 55). The adults tunnel into the grain, and the grubs, which may be found crawling over the grain and feeding on the flour from grain damaged by the adult beetles, also gnaw the broken and wounded grains.

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[1] 'Annals of Applied Biology,' 1914-15.

The females lay their eggs here and there among the stored grain. The larva from the egg feed as described, and enter the damaged grain, where they pupate. The beetle, when ready, gnaws its way out. The grub is white in colour: it has a brown head, and black-brown gnawing jaws. There are six thoracic legs. The Lesser Grain Borer has proved a destructive enemy especially in tropical climates. From some tropical centre—probably in Asia—the beetle has been conveyed in commerce all over the world, and every year it is intercepted in cargoes at ports where inspection is practised. The most attacked material is perhaps wheat, but almost any starch-containing material may suffer. Abroad, the beetles have been intercepted in lentils.

Fig. 55.—*Haricot Beans opened to show the work of* Rhizopertha dominica.

From nature. Magnified.

From Dendy and Elkington's experiments it appears that the maximum temperature for the breeding of *R. dominica* is 82° F., and the minimum for multiplication is 72° F., so that in Scotland at least we are fairly well assured against the beetle.

THE GREENHOUSE GRASSHOPPER (*Tachycines asynamorus*).

I have to record this interesting alien from a large fruit and flower-growing establishment in the neighbourhood of Glasgow. The insects had been noticed in the plant houses for some time, and were very common in the cucumber and tomato houses. When removing some staging in a cucumber house the grasshoppers, in large numbers, were found sheltering in boxes. It is not known how long the insect has been present in the plant houses, but, in trying to get information, one man who had been long in service in the nursery said he remembered them thirty years ago.

Tachycines asynamorus is an Asiatic species. Probably South China and Japan is the native home, but in commerce the insect has been imported into various countries. It was first reported in Europe from Petrograd, not in the open air. In the Glasgow nursery these grasshoppers have been seen outside sheltering in stacks of turf waiting to be used for the tomato houses; they have been seen even 100 yards from the hot-houses. They proved susceptible to cold and were usually found sheltering under boxes. The tomato and cucumber houses had not a forcing heat, only a mild heat. Where some bulbs, being forced for the Christmas market, had been darkened by small boxes being inverted over them, the grasshoppers used the boxes as shelter places. Some of the bulbs had been eaten at the tips, and the grasshoppers were suspected, though the actual culprits might have been small brownish caterpillars. The caterpillars were mentioned to me, but none came for examination. I received several examples of the grasshoppers in various stages of growth, from young forms to nearly full grown.

The grasshoppers have been greatly reduced in numbers by collecting them at night. The insects are nocturnal, and are not active in the daytime, so that it is possible for them to be present without being observed.

This grasshopper has also been reported as a conservatory and propagating-house pest in London, where it damaged tomatoes and lobelias growing under glass. Plants mentioned as having been seriously injured by this grasshopper are[1] Begonia, Cyclamen, Gloxinia, Lobelia, Chrysanthemum, Cucumber. In captivity in a breeding-cage *T. asynamorus* displayed cannibalistic[2] habits, though cabbage, tomato seedlings, lettuce, and lobelia were supplied and were eaten.

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[1] Bureau of Bio-Technology, Bulletin 8. Leeds, January 1923.

[2] Bureau of Bio-Technology, Bulletins 11 and 12. Oct.-Dec. 1923.

WOODLICE OR SLATERS.

These animals are not insects, but belong to another class of jointed-footed creatures known as Crustacea. Most of the Crustacea are aquatic, like the crab, lobster, and shrimp, but some, like the Woodlice, are terrestrial, although a species like the large sea slater or quay-louse is found on rocks and in crevices of wood, by the seaside, "a connecting link," as Webb[1] calls it, between the terrestrial Woodlice and many close allies of the Woodlice which live in the sea. Although most Woodlice are land forms, a moist environment is absolutely necessary for their existence, inasmuch as their breathing is by the diffusion of oxygen from moist air to the blood through little plate-like structures on the underside of the abdomen. If a slater be looked at carefully—the Sea Slater (*Ligia oceanicus*) is so large that the parts are not difficult to make out—the body will be seen to consist of a head that bears eyes, two pairs of antennæ (one large pair easy to see, but a smaller pair more difficult to find), and the mouth parts; a thorax of seven joints, each with a pair of walking legs; and an abdomen of six joints, carrying plate-like appendages on the under surface.

Life-history.—After pairing, the female lays her eggs in a pouch on the underside of the thorax. In this pouch the eggs are carried until they hatch. The details have been followed by Pierce[2] in the case of *Armadillidium vulgare*, which has a habit of rolling itself up into a ball. The newly born Woodlouse is white, and has only six pairs of legs. After two moults—in Pierce's observations the second moult took place in just over a fortnight from the time of hatching—the seventh pair of legs is attained. The Woodlouse continues to feed and grow and moult, and after a series of moults at irregular times ultimately becomes adult. There is one generation in a year.

Woodlice are very fond of cover. They rest or hide in the daytime, and come out to feed at night. Their food is chiefly vegetable matter, but they are also carrion feeders, and are partly carnivorous. Complaints are frequent of the damage they do in conservatories and under glass. In the special case which is the origin of this note, they were destroying tomato plants in a tomato house, where they were in high numbers. Young cucumbers and lettuces also suffer. In the winter, with no artificial heat, Woodlice bury themselves deep in the soil until the return of more genial conditions.

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[1] 'The British Woodlice,' by Wilfred Mark Webb and Charles Sillem. Duckworth & Co.

[2] "Notes on the Economic Importance of Sowbugs," by W. Dwight Pierce. U.S. Department of Agriculture, Bulletin No. 64, Part II. 1907.

Control.—Woodlice have a habit of collecting under such cover as boards or straw where moisture is present. This suggests one way of trapping them.

Paris Green—a poisonous arsenical,—dusted on to cut slices of potato, is used to destroy Woodlice. The Woodlice are attracted by the potato, of which they are fond, and are poisoned. Without the use of poison at all, very excellent baits are slices of red beetroot or mangold.

In a helpful article on "Woodlice in Glass Houses,"[1] Speyer, referring to the commonly practised method of trapping Woodlice in inverted flower-pots or boxes containing straw, found the most successful of such traps to be those with common straw treated with boiling water and added molasses.

Speyer recommends cresylic acid treatment for the destruction of Woodlice in cucumber houses in winter. Spray thoroughly the soil, walls, and woodwork with the following mixture :—

Cresylic acid (pale-straw, 97 to 99 per cent), 1 gallon.
Potash, soft soap (household), 8 lb.
Pure naphthalene, ½ lb.

Heat these together in a bucket till the soap is melted and the naphthalene dissolved. For spraying, 2 pints of the mixture are used to every 12 gallons of water.

A cucumber house, 15 feet by 12½ feet (1000 cubic feet' space), was so treated in November 1922. Two days after spraying, a collection was made from one side of the house only, with the following result :—

Species of Woodlouse.	Dead.	Living.
Armadillidium speyeri . . .	481	5
„ vulgare . . .	98	1
Metapornothus pruinosus . . .	1	6

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[1] "Woodlice in Glass Houses," by E. R. Speyer, M.A., F.E.S., Experimental and Research Station, Cheshunt, Herts, in the 'Journal of the Ministry of Agriculture.' Feb. 1924.

SOME POINTS ABOUT SOIL FERTILITY:

ILLUSTRATED FROM CRAIBSTONE EXPERIMENTS.

By Professor JAMES HENDRICK, B.Sc., F.I.C., University of Aberdeen.

THE question of soil fertility is one of perennial interest and importance, but it is difficult if not impossible to define exactly what we mean by fertility. It is easy to state that the fertility of the soil is expressed by its power to give increase, or by its fruitfulness, or its power of producing heavy crops. A little consideration, however, will show that such power may vary according to circumstances. Thus a soil which might be fruitful in a moist climate might be too open in texture and too shallow to be of high fertility under dry conditions. The fruitfulness will also vary according to the crop, for a somewhat sour soil which is suitable for a crop of potatoes or of oats might be unfertile for barley, which is more sensitive to acidity than either oats or potatoes.

The fertility of a soil also depends on the treatment which it has received, and we sometimes distinguish between "inherent" fertility, or that which is due to the nature and capacity of the soil itself apart from any interference by man, and that added fertility or "condition" or "cumulative" fertility which arises from cultivation, manuring, draining, and other interference due to the operations of man. It is difficult to draw any accurate line between these two kinds of fertility. Any division which we can make is bound to be more or less superficial, and there is always some overlapping and indefiniteness in the boundaries between what is inherent in the soil and what has been added by the cultivator.

Inherent fertility depends upon a number of different factors such as the depth of the soil, the mechanical nature of the ultimate particles of which it is composed, the chemical composition of these particles, the climate, &c. Most of these factors are not greatly modified by the operations of the cultivator, though none of them is beyond his interference, for even the effects of climate on fertility can be modified by such operations as drainage and irrigation.

Fertility, whether inherent or added, is a very complex thing, depending on a large number of interacting factors, and while experience teaches farmers to judge fertility for the purposes they have in view with a high degree of skill and certainty, there is no scientific method of estimating it with accuracy and expressing it by a precise figure. No one can, for example, draw up an exact scale of points and specify the fertility of soils by numbers or percentages. Even if it were possible to do so the scale of points would have to vary for different crops or different rotations. There are many Scottish soils, for example, which would rank much higher on a fertility scale for oats and potatoes than for barley and turnips.

The soils of most of Scotland are of glacial origin, and, as investigations carried out in Aberdeen have shown,[1] are composed, to a large extent, of superficially weathered mineral particles derived from igneous and metamorphic rocks which were mechanically ground by glacial action. In the case of Craibstone, the Experimental farm of the North of Scotland College of Agriculture, the soil is mainly composed of granitic materials, ground by ice, which have undergone all their chemical weathering since the last glacial epoch. This soil is typical of the soils of much of the surrounding district, and soils of somewhat similar type are found over considerable areas of the North and North-East of Scotland. Such soils differ from those found extensively in the south and south-east and other parts of Britain, in that they contain large reserves of lime, potash, soda, and magnesia in the form of insoluble compound silicates, and the presence of such reserves of bases has a considerable effect on their properties and on their fertility. Certain aspects of this subject have already been discussed in the 'Transactions.'[2]

Soils of the Craibstone type are often shallow and uneven, and pan is frequently found at a depth of twelve inches or less. They are generally more or less sour. They have been reclaimed in many cases from moorland during comparatively recent times, and are generally found to contain a considerable amount of humus, and to be well supplied with nitrogen. The igneous rocks from which they have been derived almost invariably contain an appreciable amount of apatite, and the soils are often fairly rich in phosphate derived from this apatite. All these characteristics are illustrated in the analysis of Craibstone soil.

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[1] "The Value of Mineralogical Examination in Determining Soil Types, with a Method of Examination and a Comparison of Certain English and Scottish Soils." By James Hendrick, B.Sc., F.I.C., and George Newlands, M.A., B.Sc., A.I.C. 'Jour. of Agric. Science,' vol. xiii., Part I. January 1923.

[1] "The Mineralogical Composition of some Scottish Soils." By James Hendrick. B.Sc., F.I.C., and George Newlands, M.A., B.Sc., A.I.C. 'Jour. of Agric. Science,' vol. xv., Part III. July 1925.

[2] "Some Characters of Scottish Soils." By James Hendrick, B.Sc., F.I.C. 5th Series, vol. xxxvii. (1925), pp. 71-85.

The fertility of Craibstone soil, and the effects of manures upon that fertility, are illustrated by numerous field experiments which have been made since the farm was acquired by the College of Agriculture. Certain of these which have not been hitherto summarised are used as illustrations in what follows.

When the College of Agriculture first entered into possession of the farm Mr Greig, now Sir Robert Greig, who was then lecturer in Agriculture in the College, with the present writer, selected an area in the South Meethill field for the purpose of a permanent rotation experiment. This area was selected as being in appearance one of the most level and uniform in the whole farm. It was cropped with potatoes without any manure in order to test its evenness, and as the crops varied from 4½ tons to 8 tons per acre in different parts of the area, the result was considered rather disappointing in that it indicated that the soil was not so even in quality as it appeared.

The soil was also tested by soil-boring tools, and a number of samples were taken for analyses. When it was bored with sampling tools it was found that it varied considerably in depth from place to place. The soil, which consisted of a dark friable loam, varied in depth from nine to eighteen inches, and below the dark soil yellow sand was always found. The analyses of samples of soil and sub-soil taken from four different parts of the area also showed differences, for while the four samples were all of the same type and, generally speaking, contained somewhat similar amounts of the chief manurial constituents, individual samples were found to differ considerably from the general average in one respect or another. Generally speaking, the greatest variations were found in the figures for the constituents which were probably available to crops.

In the second year this area was fallowed and thoroughly cleaned. In the third year, 1913, the area was divided into 42 plots each of one-twentieth of an acre, arranged in three rows each of 14 plots. A crop of oats was then taken, the whole area getting a uniform dressing of 1 cwt per acre of nitrate of lime. This crop was more uniform than the potato crop two years previously, but there were still considerable differences between different plots. It was found, however, that, generally speaking, the plots lying adjacent to one another gave similar crops, and that the differences arose gradually as one passed along the rows of plots. Each row of plots was divided into two halves making two long equal strips; the southern strip in each case was dressed with paper works waste carbonate of lime at the rate of 4 tons to the acre. In this way the number of plots was increased to 84, each of one-fortieth of an acre, of which half were limed and half unlimed.

To carry out the objects with which the experiment was started the plots were divided into different classes: (A) four plots which differed from one another only in receiving dung at different points in the rotation, but which all received the same amount of dung during each rotation and the same standard dressing of artificial manures with the turnip crop; (B) a series of plots which all received dung with the turnip crop, but received different dressings of artificial manures; and (C) a series of plots which received no dung, but which were manured with various dressings of artificial manures.

A great deal of labour was involved from year to year in manuring all these plots separately and in weighing the crops separately, and at first the result of so much labour appeared to be very disappointing, so that the abandonment of the experiment was considered. It was, however, decided to persevere with it, and as has so often been the case before, the results have become more interesting and important as time went on. As the soil is sour it was expected that lime would at once show a considerable effect, but little or no result could be seen from the use of lime, except in its effect on finger-and-toe in turnips. Further, the use of phosphatic and other artificial manures did not produce nearly so much result as was expected, and this also was at first considered disappointing. The manure which appeared to produce the most immediate effect, and which, as a matter of fact, has continued to produce the greatest effect all through, is dung.

Most of the plots were laid out in triplicate; a certain number, however, are only in duplicate. The plots were distributed throughout the area in such a manner that no two which received the same treatment are near to one another, and as far as possible they were distributed so that the plots receiving the same treatment should not all be in those parts which the preliminary observations had shown to be better than the average or below the average. In this way it was hoped that by averaging the results of the triplicates or the duplicates, as the case might be, a better result would be obtained than from individual plots.

This preliminary work brought home to us very thoroughly the difficulties of field experiments and the danger of drawing any conclusions from results of individual plots, or even of duplicate or triplicate plots, until such results had been very thoroughly tested over a period of years. They also impressed upon us the difficulty of selecting land which is really uniform. Even when the land looks uniform, whether when ploughed or when under crop, it will probably not prove to be uniform if subjected to stricter tests.

TABLE I.

Analysis of Craibstone Soil.

Fine earth dried at 97° C.

Mechanical Analysis.

	South Meethill.		Woodlands.
	1906 Method.	1925 Method.	1906 Method.
Fine gravel	6.23	10.81	17.30
Coarse sand	32.57	36.68	29.25
Fine sand	26.71	19.49	20.50
Silt	6.64	6.75	9.50
Fine silt	12.93	9.93	8.30
Clay	5.47	5.56	1.75
Soluble in dilute HCl	—	1.87	1.10
Loss on ignition	9.72	9.38	12.30

Chemical Analysis.

	South Meethill.	Woodlands.
Soluble in concentrated hydrochloric acid—		
Lime	0.53	0.692
Magnesia	0.19	0.424
Potash	0.49	0.325
Phosphoric acid	0.36	0.194
Soluble in 1 per cent citric acid ("probably available constituents")—		
Lime	0.141	0.336
Magnesia	0.031	—
Potash	0.033	0.038
Phosphoric acid	0.092	0.089
Sand and insoluble silicates	88.81	81.41
Nitrogen	0.30	0.32
Lime as carbonate	Nil	Nil
Lime requirement as $CaCO_3$	0.236	0.278
pH value of soil extract	5.8	6.0

In Table I. typical analyses are given of soils from two fields at Craibstone. The first of these analyses is from the South Meethill field. The mechanical analyses show the soil to be of a light loamy texture containing a large amount of coarse sand. The same is true of all the soils at Craibstone which we have analysed. The amount of clay present is small. As the table shows, the amount found in the South Meethill soil is considerably greater than that found in the soil of the Woodlands field. In all cases, however, soils of this type exhibit a greater amount of coherence than might be expected from the small amount of clay which they contain. Both soils contain a fair amount of humus matter and of nitrogen.

The most remarkable feature about the chemical analysis of these soils is the large proportion of the phosphate which is found to be in a "probably available" condition. The analyses also show that the soils are well supplied with probably available potash, and also with considerable amounts of other bases such as lime and magnesia, which can be extracted with a weak citric acid solution. The Craibstone soils are quite free from carbonate of lime, and show a considerable lime requirement. The pH value indicates that they are slightly acid.

As a revised method of mechanical analysis has recently been introduced in this country the mechanical analysis of South Meethill soil is given twice over, first, by the old (1906) method, and second, by the new (1925) method. The analyses were not made on the same sample, but on samples taken from adjacent parts of the field at different times. They show, however, very considerable similarity.

The rotation pursued on these plots is the ordinary six-course rotation of the district—namely, turnips to which the main part of the manure both dung and artificials is applied, followed by barley or oats with grass seeds, then hay followed by two years' pasture, and after the lea has been ploughed up, by oats. The first rotation began with the turnip crop in 1914. The land was broken out of lea in the winter of 1918, and the limed plots got a second dressing of 4 tons of paper works lime in December of that year. In 1919 an oat crop was taken, and a second oat crop in 1920. The ordinary course of the experiment was departed from in that year, as under the crop production scheme the whole of the field, of which these plots formed a part, was cropped for the second time with oats. In the following year, 1921, the second turnip crop was taken, and since then the rotation has proceeded in the ordinary way.

The plots referred to in this paper, and the manuring they received, were as follows :—

MANURING.

A.

Plot 1. Triplicate. Dung, autumn before turnips. Standard artificials with turnips.

„ 2. Triplicate. Dung, spring with turnips. Standard artificials with turnips.

„ 3. Triplicate. Dung, spring with barley. Standard artificials with turnips.

„ 4. Triplicate. ½ dung, autumn before turnips } Standard artificials with turnips.
½ „ spring with hay

B.

Plot 6. Duplicate. Dung, spring with turnips. No artificials.

„ 9. Duplicate. Dung, spring with turnips. Standard artificials with turnips.

„ 10. Duplicate. Dung, spring with turnips. Heavy artificials with turnips, and artificials with "clean land corn" and with hay.

C.

Plot 11. Triplicate. Standard artificials with turnips.
„ 12. Triplicate. Heavy artificials with turnips.
„ 13. Triplicate. Standard artificials (superphosphate) with turnips.
„ 14. Triplicate. Standard artificials (basic slag) with turnips.
„ 15. Triplicate. Standard artificials (bone meal) with turnips.
„ 16. Triplicate. Standard artificials (ground Algerian phosphate) with turnips.

The dung given to all the plots in Sections A. and B. was at the rate of 12 tons per acre for the rotation. This was applied in one dressing to all the plots except No. 4, to which it was given in two portions, half, 6 tons per acre, in the autumn before turnips, and half, 6 tons per acre, in the spring for hay.

The standard artificials applied to all the plots in A. and to Plot 9 in B. and Plot 11 in C. were as follows :—

	Standard Dressing of Artificials. cwt.
Sulphate of ammonia	½
Superphosphate, 32 per cent	2
Steamed bone flour	3
Potash salt, 30 per cent	1

On Plots 13, 14, 15, and 16 the same amount of sulphate of ammonia and potash salt was given as in the standard dressing, and the same amount of phosphate per acre was also applied; but in the case of Plot 13 this was all in the form of superphosphate, in the case of Plot 14 as basic slag, in the case of Plot 15 as bone meal, and in the case of Plot 16 as ground Algerian or other North African phosphate.

The heavy artificials applied to the turnips in Plots 10 and 12 were as follows :—

	Heavy Dressing of Artificials. cwt.
Sulphate of ammonia	1
Superphosphate, 32 per cent	3
Steamed bone flour	4
Potash salt	2

In addition, Plot 10 received, with the grain crop which followed turnips, ½ cwt. sulphate of ammonia, 2 cwt. superphosphate, and ½ cwt. muriate of potash, and with the hay crop, 1 cwt. sulphate of ammonia and 2 cwt. superphosphate.

The paper works lime, which was used in liming half of each plot, was dried by-product carbonate of lime from the causticising plant of a local works. It contained about 75 per cent of carbonate of lime, the remainder being moisture and impurities. As 4 tons per acre were applied in February

1914 and again in December 1918, the whole liming amounted to 3 tons per acre of pure calcium carbonate on each of these occasions, or a total of 6 tons of calcium carbonate per acre.

In 1920, when a second, yaval, crop of oats was taken, artificial manuring was given as follows:—

	All Plots, Section A. and Plot 9.	Plot 10.	All Plots, Section C.
Sulphate of Ammonia . .	½ cwt. per acre	1 cwt. per acre	¾ cwt. per acre
Superphosphate	1 „ „	1½ „ „	—
Steamed bone flour . .	1 „ „	1½ „ „	—

During the two years the plots were in pasture during each rotation it was not possible to obtain any results, as the crop could not be weighed, and the plots were too small to feed stock upon them separately, and measure the live weight increase. Cattle were therefore grazed all over them, and as much care as possible was taken to prevent any obvious unevenness arising in this way.

When the above scheme of manuring was drawn up it was supposed that phosphates and lime were the substances likely to produce the greatest effect on Craibstone soil when the results from the whole rotation were taken into account. It was argued—" (1) Craibstone soil is well supplied with humus and with nitrogen, and with suitable manuring a good growth of clover will probably be obtained, which will enrich the land greatly in nitrogen, as it will lie in grass for three years in each rotation. It will not therefore be necessary to give much nitrogenous manure, and as nitrogenous manures are the dearest class, this will effect considerable saving in the manuring of the rotation. (2) Craibstone soil is rich in minerals which contain potash, and is therefore naturally well supplied with this constituent, so it will probably be wasteful to apply much potash, which is also an expensive type of manure. (3) If we manure well with phosphates and lime we will probably get a strong growth of clover which will enrich the soil in humus and in nitrogen." As will be shown by the results, the second of these preconceptions only has proved correct.

It is not proposed to deal here in detail with the results of the individual plots, but to indicate certain broad results which come out with great clearness and certainty from a consideration of the whole course of the experiment. The results of individual plots, too, even when the plots are in triplicate, are not very reliable owing to the unevenness of the ground, but results of a high degree of certainty can be obtained by dealing with the averages of large groups of plots.

In Section A. there were 4 plots all in triplicate, or 12 plots in all, each of which received the same weight of dung and artificials during the rotation. The crops obtained from the limed halves, and from the unlimed halves respectively, of all of these have been averaged for each year, and we thus obtain the average result from 12 limed plots, as compared with the average results for 12 unlimed plots, for each year and crop of two rotations. These are given in Table II. Similarly, in Section B. there were 3 plots in duplicate, or 6 plots in all, and these have been similarly averaged for the limed and unlimed portions, and the same has been done for the 6 plots in triplicate, or 18 in all, of Section C., and all these results also are given in Table II.

TABLE II.

ROTATION EXPERIMENT. SOUTH MEETHILL, CRAIBSTONE.

Effect of Dung and Lime.

		A. Dung applied at different times.		B. Dung applied to Turnips.		C. No Dung	
		Standard Artificials.		Different Artificials.		Different Artificials.	
		Limed.	Unlimed	Limed.	Unlimed	Limed.	Unlimed.
Number of plots averaged.		12	12	6	6	18	18
1914 Turnips.	Tons, cwt.	13-6	14-18	12-3	12-11	8-18	7-18
1915 Barley—							
Grain.	cwt.	22.3	22.5	27.2	23.5	24.4	21.4
Straw.	cwt.	38.9	35.3	39.7	37.4	39.1	33.5
1916 Hay.	cwt.	45.2	51.4	55.1	57.1	38.0	34.5
1919 Oats (Victory)—							
Grain.	cwt.	37.6	43.4	32.6	39.6	38 8	37.5
Straw.	cwt.	27.5	32.0	28.0	35.5	30.3	31.7
1920 Oats (Victory)—							
Grain	cwt.	32.2	36.4	29.9	34.0	33.4	34.9
Straw.	cwt.	37.0	42.6	34.1	38.6	39.7	41.1
1921 Turnips.	Tons, cwt.	20-13	21-10	19-1	21-6	19-4	18-17
1922 Oats (Victory)—							
Grain.	cwt.	29.3	30.1	28.6	30.8	23.5	23.1
Straw.	cwt.	34.5	33.8	31.6	34.6	28.8	26.3
1923 Hay.	cwt.	60.8	61.4	54.1	58.8	37.8	27.0

The most remarkable result obtained in these experiments has been with regard to the effect of lime. In every case in Sections A. and B. to which dung was applied, and with every crop except barley, the effect of lime has been to diminish the crop. On the other hand, in Section C., where the plots received no dung, in nearly every case liming has produced some increase in crop.

If there is one thing of which agricultural text-books seem certain, it is that liming will increase the fertility of acid soils. Statements to that effect are constantly made, and it has only been gradually that those in charge of this experiment have been able to persuade themselves that in the case of this soil, when dung is used, lime diminishes the crops of oats quite decidedly, and of turnips and hay slightly, while barley is slightly, but not decisively, benefited by liming. Where no dung but only artificials are used, liming produces a decided increase with barley and hay, a small increase with turnips, and a somewhat uncertain result with oats.

It was found that liming had an effect in reducing the amount of finger-and-toe in the turnip crop. In 1914 the amount of disease on the limed and unlimed portions of a considerable number of the plots was determined. The results are shown in Table III.

TABLE III.

SOUTH MEETHILL ROTATION EXPERIMENT.

Effect of Lime on Finger-and-Toe in Turnips.

Plot	Limed			Unlimed		
	Good	Slightly diseased.	Badly diseased	Good	Slightly diseased	Badly diseased
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
2	93.5	6.5	—	78.4	15.7	5.9
3	94.7	4.6	0.7	78.7	17.7	3.6
6	93.0	6.0	1.0	73.5	22.7	3.8
7	89.7	9.3	1.0	75.9	22.0	2.1
10	91.5	6.1	2.4	88.4	10.0	1.6
12	90.3	9.3	0.4	85.5	13.0	1.5
13	97.3	2.7	—	81.7	15.3	3.0
14	96.0	3.0	1.0	96.7	2.9	0.4
15	95.8	3.8	0.4	88.0	11.6	0.4
16	93.7	5.3	1.0	92.5	5.0	2.5

It will be seen that in every case, except on Plot 14, the liming has checked the disease. On Plot 14, which received basic slag, there was little disease either on the limed or on the unlimed portion. The effect of lime in keeping finger-

and-toe in control has already been illustrated in the 'Transactions' from the results of certain Craibstone experiments.[1] The remarkable fact brought out by this experiment, both in 1914 and 1921, is that though lime reduced the amount of disease it diminished the crop where dung was applied, though it increased it somewhat where no dung was used.

Lime, whether applied as carbonate of lime or as burnt lime, neutralises the acid of the soil and so reduces soil sourness, but its action goes further. It is itself a necessary constituent of crops, but it is still more necessary for the reactions which take place in the soil and lead to the production of nitrate, the fixing of free nitrogen in organic combination, the flocculation of clay, &c., and if there is sufficient lime present for these purposes there will always be plenty present for the direct use of crops.

In the case of these plots the application of lime has reduced the acidity, but it has not removed it. Chemists express degree of acidity by a scale, technically known at the pH value, in which pH = 7 means neutrality, and all values below 7 express acidity, and the lower the value the greater the acidity. On the other hand, all pH values greater than 7 indicate alkalinity, and the higher the value the greater the alkalinity. The pH value of the unlimed portions of these plots varies from 5.9 to 6.1 and averages 6.0, while that of the limed portions varies from 6.3 to 6.5 and averages 6.4. Thus it will be seen that the application of 6 tons of carbonate of lime has only reduced but has not removed the acidity. Soils of the type of Craibstone can absorb great quantities of lime without becoming quite neutral. Oats are much more tolerant of acidity than barley, and that, no doubt, accounts for the difference in the effect of lime upon these crops shown in Table II.

The next result which has come out clearly from these experiments is the great effect of dung, especially on the hay and pasture. When the plots first came into grass in 1916, attention was at once drawn to the dunged plots. They stood out quite clearly as compared with those which had received no dung on account of the rich growth of clover, and especially of red clover, which distinguished them. In most cases the dung had been applied two years before to the turnip crop; still, it produced a far greater effect on the growth of clover than was produced by any of the combinations of artificial manures when dung was not given, and on the dunged plots the clover seemed to be almost as strong on plots which got dung only and no artificials as on plots which, in addition to dung, received heavy dressings of artificials. Where lime was given with the dung it was not only obvious that the liming had not increased the clover, but to appearance the clover seemed to be weaker on the limed halves of the plots. This, as has been already shown above, was confirmed when the hay made on these plots was weighed, and it was found that the crops yielded by the limed portions were considerably lighter than those yielded by the unlimed portions. We had expected to find that the greatest increase in the growth of clover would be seen on plots which were well treated with phosphate and lime, and instead we found that on this soil the presence of these did not produce any increase sufficient to strike the eye, while the use of dung produced an increased growth of clover which could not be overlooked even by a casual observer. This improvement continued during the pasture years 1917 and 1918, in which the dunged plots always showed a better growth of clover than those which received only artificials, while the lime did not appear to have benefited the clover.

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[1] "The Use of Lime in Controlling Finger-and-Toe in Turnips," by James Hendrick, B.Sc., F.I.C., 'Trans. Highland and Agric. Soc.,' 5th Series, vol. xxx., pp. 137-145.

[1] "An Experiment on the Control of Finger-and-Toe by Liming," by James Hendrick, B.Sc., F.I.C., 'Trans. Highland and Agric. Soc.,' 5th Series, vol. xxxv., pp. 54-68.

We were surprised during the first rotation to find that no distinct difference could be seen in pasture between the limed and unlimed plots. As these plots lay in long strips one could look down the limed and unlimed portions from each end, and readily detect, in a good light, any difference in their general appearance.

These plots came into pasture again in 1924 and 1925. It was soon noticed that the limed and unlimed portions now showed a distinct difference, especially in early summer, when certain weeds such as buttercups were in bloom. On close examination of the plots it was found that the lime had a distinct effect in diminishing the number of weeds. There was less chickweed and fewer buttercups on the limed than on the unlimed plots, and a distinct difference in colour was to be seen between the plots even when the weeds were not in bloom. Although the growth of grass and clover on the dunged plots was greater than on the undunged plots, and the turf on the dunged plots was much closer, still this difference between the limed and unlimed portions was visible on the dunged as well as the undunged plots. It was noticed also in the second rotation that when the land was under corn crop and turnips, there was less spurry on the limed than on the unlimed plots.

Another rotation experiment which has yielded results of interest is being carried out on the Woodlands field. The analysis of the soil of this field is given in Table I., and, as has been already stated, it shows that the soil is of the same general type as that of the South Meethill field, though it contains less clay and is rather richer in humus. It is similar to the South Meethill field in acidity, having a pH value of about 6. The agricultural reputation of this field is not high. It was considered by practical men who had experience of the farm to be a much poorer field than the South Meethill field, and was ranked as a field of low fertility. This is perhaps partly due to the fact that the soil is not so deep as that of the South Meethill field, and that, generally speaking, a pan was found at a depth of from 6 to 12 inches below the surface. Before the rotation experiment was begun in 1922 the portion of the field on which the plots are situated had been well manured for several years. As it had been found that the depth of the pan varied at different points in the area which is included in the plots, the whole area was trenched and the pan broken up a few years before the experiments began; in this way the soil was rendered more or less even over the whole area. Before the rotation experiment began, and after the pan had been broken up, variety trials were conducted on this land. During these trials, where equal manuring was given over the whole area, the results indicated that the soil was fairly even in quality, much more even than that occupied by the plots on the South Meethill field.

The land under experiment is divided into 6 strips, each of which is divided into 6 plots. Each strip represents a year in the ordinary 6-course rotation of the district, so that in each year all the six crops of the rotation are represented. If, therefore, strip No. 1 is under root crop, No. 2 bears a crop of barley, No. 3 a crop of hay, Nos. 4 and 5 are under pasture, and No. 6 under a crop of oats. The following year the next crop of the rotation in order is taken on each strip, and so on. The corresponding plots across the strips are treated in the same way. The treatments are as follows :—

Plot 1. No manure.
,, 2. Complete manure with superphosphate.
,, 3. Complete manure with ground mineral phosphate.
,, 4. The same as Plot 2, omitting phosphate.
,, 5. The same as Plot 2, omitting nitrogen.
,, 6. The same as Plot 2, omitting potash.

Complete artificial manuring given to Plot 2 is as follows :—

	Turnips and Potatoes.	Oats, Barley, and Hay.
Sulphate of ammonia . . .	1 cwt.	1 cwt.
Superphosphate	4 cwt.	2 cwt.
Muriate of potash	1 cwt.	1 cwt.

To Plot 3 the same manuring is given, except that 4 cwt. of ground mineral phosphate is applied to turnips or potatoes instead of superphosphate, and 2 cwt. of ground mineral

TABLE V.

POTASH EXPERIMENT. WOODLANDS FIELD.

Potatoes.

Plot		1924.		Average for 1921-2-3-4.		Section C. 1924.	
		Tons,	cwt	Tons,	cwt	Tons,	cwt.
1	No manure . . .	2	12	6	11	2	18
2	1 cwt. sulphate of potash	9	12	11	19	6	14
3	1.8 cwt. sulphate of potash —magnesia . .	9	12	11	17	6	0
4	No potash . . .	4	16	8	8	4	14
5	.95 cwt. muriate of potash	8	16	11	15	7	12
6	1.9 cwt. potash manure salt	8	14	11	15	7	8
7	3.3 cwt. kainit . .	8	11	11	7	6	10
8	No potash . .	3	13	8	0	3	5
9	3.2 cwt. French kainit .	10	4	11	17	7	1
10	2.4 cwt. French sylvinite	9	1	11	14	7	15

Table V. shows the results of the experiment in 1924, together with the average results for the four years 1921 to 1924. In 1924 each plot was divided into 3 sub-plots, A., B., and C. A. and B. were manured as usual, while C. got the usual dressing of 1 cwt. of sulphate of ammonia and 3 cwt. of superphosphate, but was given no potash manure, in order to test how far the residues of previous manuring would increase the crop.

One object of the experiment was to compare different potash manures, and it will be seen that so far as increase of crop goes they all gave somewhat similar results, and all of them gave, on the average, a large increase in the crop. Without potash manure on Plots 4 and 8, only comparatively small crops are obtained. By good all-round manuring and general good conditions the crop on this poor shallow soil can be raised to about 12 tons per acre.

When potash manure was omitted in 1924 in order to test the residues of previous potash manuring, it was found that there was a considerable reduction in the crop on all the plots receiving potash manure. The crop on the plots receiving no potash, Nos. 1, 4, and 8, is about the same in Section C. as in Sections A. and B., so that the diminution in crop appears to be due to the want of potash. This is somewhat surprising in view of the result already obtained in the rotation experiment, where it was found that the omission of potash made little or no difference. The part of the field on which the potato experiment took place was naturally poorer than the part on which the rotation experiment took place.

SUMMARY AND CONCLUSIONS.

The field experiments at Craibstone illustrate what has often been illustrated before—namely, that the results obtained in field experiments from single plots and in a single season cannot be relied upon, and are only apt to be misleading. Although this fact has often been illustrated in experiments elsewhere, we still find that the agricultural public, and even the agricultural press, are apt to place reliance on the results of single experiments. In the case of the rotation experiment on South Meethill field, the land was carefully chosen and appeared to be the most even portion of soil of such an area that is to be found on the whole farm; nevertheless, the trials showed that no reliance could be placed on the results of single plots, and that even the results obtained from triplicate plots were not of any high degree of reliability. Results of any high degree of probability could only be obtained by taking the general sense of the experiments over a considerable number of years, and from a considerable number of plots.

Soil Acidity.—During recent years a large number of experiments have been carried out upon the effect of soil acidity on crops, and it has been shown that there is an optimum range of acidity or alkalinity for each kind of crop. Many of our commonly grown crops grow best under moderately acid conditions such as are represented by a pH value of 6. The addition of lime either as burnt lime or as carbonate of lime reduces the acidity of the soil; in the case of certain of our common crops this may not be favourable to the growth of the crop, but rather the opposite. The result of the Craibstone experiments indicates that a pH value of 6 is favourable to the growth of such crops as oats, turnips, and the mixed herbage of grasses and clovers which we cultivate for hay and pasture. The reduction of the acidity to a pH value of about 6.4 by the use of carbonate of lime has not increased these crops, but has diminished them. The only crop grown in the rotation on the South Meethill field on which there is any evidence that the reduction of the acidity is favourable is the barley crop. The evidence, so far as it goes, indicates that a pH value of 6.4 is rather more favourable to the barley crop than a pH value of 6.

This does not mean that liming is without beneficial effect upon such a soil as that of Craibstone. Distinct beneficial effects have been found from the use of lime even when the amount of crop obtained has not been increased. In the case of turnips the effect of lime has been to keep in check finger-and-toe. The use of lime has also checked the growth of certain common weeds. This has been illustrated on many of the limed plots at Craibstone, in addition to those on the South Meethill field. There is another effect of lime which is not touched upon by these experiments, but which must not be forgotten. Recent work on nutrition, such as that carried out in the Rowett Institute, has indicated that a sufficient supply of lime in pasture, and in other crops, may have an important value in the nutrition of stock. It may be that while the addition of lime reduces the crop somewhat in certain cases, it benefits the stock which consumes the crop.

The crops which have become established by custom in any district are, generally speaking, those which experience has shown to be suited to the district. Modern research indicates that one of the factors which determines what crops shall be grown in a district is the reaction of its soils. In Scotland generally the soils tend to be acid in reaction, but the main crops grown in Scotland, oats, turnips, potatoes, and grass, are suited to a moderate degree of acidity, such as is represented by a pH value round about 6. On the other hand, where crops like barley are grown, it is important that the acidity should be less; and if sugar beet and lucerne are to become remunerative crops in Scotland, it will also be important that the soils should be sufficiently limed to have a neutral, or nearly neutral, reaction.

Until recently it was supposed that, in order to have a sufficient supply of lime or other base to keep the soil healthy, it was necessary to have a supply of lime in the form of carbonate and a practically neutral reaction. Recent research shows that a sufficient supply of lime and other bases may be present although no carbonate is present, and although the soil exhibits a considerable degree of acidity. These bases are held in the form of what are called "exchangeable bases." The soil must always have a sufficient supply of suitable bases in such form in order to remain healthy. This, however, is quite a separate subject, and a sufficient supply of exchangeable bases is not inconsistent with a moderate degree of acidity. Probably on soils of the Craibstone type, which are very prevalent throughout the North-East of Scotland, a good supply of exchangeable bases is maintained through the presence of undecomposed or partially decomposed silicates, of which a considerable part of the mineral matter of the soil is made up. The results which have been obtained on soils of this type would probably be considerably modified on soils of a different type, and liming might be much more beneficial to soils without such a supply of bases in the form of silicates as is present in Craibstone soil. It has been shown, in the experiments described above, that large quantities of carbonate of lime are necessary to produce a comparatively slight alteration in the pH value, while, on the other hand, in such soils the supply of available bases is only very slowly exhausted, probably because it is continually renewed by the gradual decomposition of compound silicates.

Effect of dung.—There is no manure in which the practical farmer has greater confidence than in dung. The Craibstone experiments tend to support the high opinion which the practical man has of the effects of dung. No combination of artificial manures has had nearly the same effect upon the growth of the hay crop on the South Meethill field as a dressing of dung, even although the dung was not applied directly to the hay crop, but two years previously to turnips. In fact it was found that wherever the dung was applied during the rotation it had a great effect upon the hay crop, and especially upon the growth of red clover in the hay. The effect of dung upon the turnip crop, as compared with artificials, was also very marked. On the other hand, upon the cereal crops, whether oats or barley, artificial manures without dung gave as good, or nearly as good, a return as the plots manured with dung and artificials. It has to be remembered that on most plots the dung was not applied directly to the cereals, but to the turnip crop. The effects obtained from dung on Craibstone soil are probably more striking than on the average. As will be shown later, Craibstone soil is naturally well supplied with phosphates, potash, and other bases, and therefore phosphatic and potassic manures produce a less marked effect than on many soils. On the whole, the kind of artificial manure which produces the greatest effect on Craibstone soil is nitrogenous manure; dung supplies nitrogen which the Craibstone soil requires, and also gives it a dressing of humus matter which helps to improve its mechanical condition.

It is difficult to explain why lime has a greater effect in increasing crop when dung is not used than when it is used. This is not an effect of reduction of acidity, for lime reduces the acidity quite as much on the dunged as on the undunged plots; it is probably, in part at any rate, due to the effect of the humus matter of the dung upon the mechanical condition of the soil. This view is supported by the fact that lime had on the whole a greater effect in increasing the crops on the undunged plots in the first rotation than it had in the second.

After the lea was ploughed up in 1918 the amount of humus in the undunged plots was increased from the residues of the grass which had been ploughed in, and consequently during 1919, 1920, 1921, and 1922 the effect of lime upon the undunged plots appears to be less marked than it was in the first rotation when the land was poor in humus. It is also possible that the lime may have an effect in promoting bacterial action in these plots, while on the dunged plots the easily fermentable humus of the dung is itself sufficient to promote bacterial action without the further addition of lime.

Phosphates.—The results of the experiments referred to above, and of a number of other experiments with phosphates which have been carried out at Craibstone, indicate that this soil is so well supplied naturally with phosphates that phosphatic manuring has little effect upon it, and produces comparatively little increase even in the case of the turnip crop. The soil analyses given in Table I. show surprisingly large amounts of available phosphate. Mineralogical examination of the soil shows that it contains a distinct amount of apatite among the original minerals of which it is formed. In the earlier experiments at Craibstone the slight effects obtained from the use of phosphatic manures were considered surprising, but these have been fully confirmed by numerous trials upon different crops, and are explained by the nature of the soil as shown by chemical and mineralogical analysis. It is probable that many soils of this type, which are derived from igneous rocks which contain apatite, are naturally well supplied with phosphate.

During recent years the citric acid test for measuring available phosphate in soils and in manures has been somewhat discredited. The results of the Craibstone experiments, so far as they go, are favourable to the citric acid test. The test shows an abnormally high amount of available phosphate in the soil, and the field experiments show that phosphatic manures have little effect upon the crop.

Potash.—The soil of Craibstone, and soils of similar type, contain large quantities of potash and other bases in undecomposed and partially decomposed compound silicates. Analysis shows that Craibstone soil is well supplied with available potash, though the quantities are not so exceptional as those of available phosphate (Table I.) The field results are in accordance with the results of analysis, and show that potash manuring is not urgently needed. When the soil is in good condition little or no increase of crop is obtained from potash manuring, but the available potash appears to become exhausted comparatively readily, and when the soil is in a run-down condition excellent response to potash manuring may be shown. The contrast shown in the Craibstone experiments between results obtained on the same field with potash manures from soil in high condition and soil in poor condition was much greater than was expected.

Nitrogen.—Although Craibstone soil is naturally well supplied with humus and with the organic nitrogen contained in it, experiments show that, generally speaking, nitrogenous dressings produce a much greater effect than dressings of any of the other types of artificial manures. It is shown in Table IV. that the application of 1 cwt. of sulphate of ammonia per acre gives large increases of both grain and straw in the case of the cereals, oats and barley; it also gives a large increase in the turnip crop, and a considerable increase with both potatoes and hay. Though nitrogenous manures are the most expensive, they produce on this type of soil the most remunerative results so far as quantity of crop is concerned.

The natural fertility of soils of this type is great. If only they have depth to permit of root range, and sufficient water-retaining power to resist drought, they are very valuable and fertile. This natural fertility is due in great part to the large reserves of undecomposed and partially decomposed minerals which they contain, which give them a practically unexhaustable supply of potash and other bases, and generally a large supply of phosphate. Though they are generally acid in reaction, the acidity is not too great for the crops which are most largely grown in Scotland, oats, turnips, potatoes and grass, nor is lime exhaustion, and the excessive acidity which follows, readily produced, for as the soil becomes acid the compound silicates present gradually give up their natural supply of bases to neutralise the acids. Both the exhaustion of bases and the increase of acidity take place very slowly.

MILK RECORDS.

TWENTY-THIRD YEAR—RECORDS OF 28,410 COWS.

By WILLIAM STEVENSON, B.Sc., N.D.A., N.D.D., Superintendent,
The Scottish Milk Records Association.

SYSTEMATIC milk recording in Scotland was continued in 1925 under the direction of the Scottish Milk Records Association on the same lines as in 1924 and previous years. The new scheme of private or unofficial milk records for unregistered herds successfully inaugurated in 1924 was also continued during this year.

The Association in 1925 consisted of the following members :

Name and Address.	Body Represented.
Mr John Robson, Jun., Lynegar, Watten	Caithness Milk Recording Society.
Mr Thos. Barr, Hobsland, Monkton	Central and South Ayrshire Milk Recording Society (4 Circuits).
Mr William D. M'Cubbin, Lochlands, Maybole	
Mr William D. Wardrop, Rigg, Auchinleck	
Mr Andrew Wilson, Finlayston, Ochiltree	
Mr George Templeton, Carnell Farm, Hurlford	Central Ayrshire No. 2 Milk Recording Society.
Mr Alex. Y. Allan, Aitkenbar, Dumbarton	Dumbartonshire Milk Recording Society.
Mr William L. Ferguson, Catlinns, Lockerbie	Dumfriesshire Milk Recording Society (4 Circuits).
Mr Alex. Kirkpatrick, Barr, Sanquhar	
Mr Robt. Millar, Shawsholm, Closeburn	
Mr Mungo Sloan, Douglashall, Ecclefechan	
Mr Andrew Hamilton, Kessington, Bearsden	East Kilbride and District Milk Recording Society.
Mr Robert M. Broadfoot, Whitekirk Mains, Prestonkirk	East Lothian Milk Recording Society.
Mr Robt. M. Reid, The Glen Farm, Falkirk	East Stirlingshire Milk Recording Society.
Mr William T. Dunlop, Gree, Fenwick	Fenwick (High) Milk Recording Society.
Mr William M'Adam, Athronhall, Milnathort	Fife Milk Recording Society (2 Circuits).
Mr James W. Miller, Lochhead, East Wemyss	
Mr D. F. Mackenzie, Parks of Inches, Inverness.	Highland Milk Recording Society.
Mr Donald Gillespie, Craigens, Gruinart	Islay Milk Recording Society.
Mr Andrew Craig, Ryesholm, Dalry	"John Speir" Milk Recording Society.
Mr Robert Young, Drum, Kilkenzie	Kintyre Milk Recording Society.

Name and Address.	Body Represented.
Mr Robt. M'Kinlay, Hillhouse, Sandilands	Lesmahagow Milk Recording Society.
Mr Andrew C. M'Candlish, Claunch, Sorbie	Lower Wigtownshire Milk Recording Society (2 Circuits).
Mr Alexander M. Owen, Culnoag, Sorbie	
Mr James Seton, Shewalton Mains, Irvine	Montgomerie Milk Recording Society.
Mr John A. Carlyle, B.Sc., Prudential Buildings, Arbroath	North of Scotland Milk Recording Society.
Mrs Hope B. Sutherland, Rothiesholm, Stronsay	Orkney Milk Recording Society.
Mr George Buchanan, Hunterhill, Paisley	Renfrew and Bute Milk Recording Society (2 Circuits).
Mr Robt. Howie, Flatterton, Inverkip	
Mr William Howie, Carnwadric, Thornliebank	Renfrewshire (Upper Ward) Milk Recording Society.
Mr Andrew Cochran, High Ardwell, Kirkcolm	Rhins of Galloway Milk Recording Society (4 Circuits).
Mr T. R. Evans, Alton, Drummore	
Mr John Forster, Mains of Larg, New Luce	
Mr James Wither, Awkirk, Stoneykirk	
Mr Andrew Rutherford, Pinnacle, Ancrum	Roxburgh and District Milk Recording Society.
Brig.-Gen. J. A. Houison-Craufurd, Dunlop House, Dunlop	Stewarton and Dunlop Milk Recording Society.
Mr H. G. Baird, Kirkchrist, Kirkcudbright	Stewartry of Kirkcudbright Milk Recording Society (5 Circuits).
Mr H. W. B. Crawford, Forneth, Castle-Douglas	
Major C. R. Dudgeon, Cargen Holm, Dumfries	
Mr William P. Gilmour, Balmangan, Borgue	
Mr John Crooks, Little Ochiltree, Uphall	West Lothian Milk Recording Society.
Lt.-Col. W. T. R. Houldsworth, of Kirkbride, Maybole	The Ayrshire Cattle Herd-Book Society of Great Britain and Ireland.
Mr James Howie, Hillhouse, Kilmarnock	
Mr Thomas C. Lindsay, Aitkenbrae, Monkton	
Mr A. W. Montgomerie, Lessnessock, Ochiltree	
Mr Matthew Bowie, Balmuildy, Maryhill, Glasgow	The British Friesian Cattle Society.
Mr Alexander Munro, Leanach, Culloden Moor	
Mr T. J. Anderson, Cairnfield, Lerwick	The Shetland Cattle Herd-Book Society.
Mr A. B. Garriock, Greenfield, Lerwick	
Mr Alex. Murdoch, East Hallside, Hallside	The Highland and Agricultural Society of Scotland.
Mr John M'Caig, Belmont, Stranraer	
Sir Hugh Shaw Stewart, Bart., C.B., of Ardgowan, Inverkip	

Name and Address.	Body Represented.
Mr William Donald, Fardalehill, Kilmarnock	The West of Scotland Agricultural College.
Mr T. C. Lindsay, Aitkenbrae, Monkton	
Principal W. G. R. Paterson, 6 Blythswood Square, Glasgow	
Mr Harry Armour, 16 Murrayfield Road, Edinburgh	The Edinburgh and East of Scotland College of Agriculture.
Mr Alexander Lauder, D Sc, 13 George Square, Edinburgh	
Principal E. Shearer, 13 George Square, Edinburgh	
Mr G. G. Esslemont, M B.E., B.Sc, 41½ Union Street, Aberdeen	The North of Scotland College of Agriculture.
Professor J. Hendrick, Marischal College, Aberdeen	
Mr J F. Tocher, D.Sc., 41½ Union Street, Aberdeen	
Mr Robert Dickie, Knockenjig, Sanquhar	Co-opted Members.
Mr John Drysdale, 5 St Andrew Square, Edinburgh	
Mr James Dunlop, Board of Agriculture for Scotland, Edinburgh	
Mr George Hobson, 4 Southampton Row, London, W C 1	
Mr Robert Laird, Lawthorn, Irvine	

Chairman—Mr Thomas C. Lindsay.

The following were the principal members of the staff :—

Secretary and Treasurer—Mr John Howie.
Superintendent—Mr William Stevenson, B Sc, N.D.A, N D D.
Assistant Superintendent—Mr Percy H. Hart.

SCHEME OF OFFICIAL MILK RECORDS.

Administration.

In 1925, as in previous years, the scheme of official milk records was administered by the Association through local Milk Recording Societies. The grant from the Development Fund, obtained through the Board of Agriculture for Scotland, was continued in 1925 on the same conditions as in the previous year. The grant authorised for 1925 amounted to approximately £3500.

The Ayrshire Cattle Herd-Book Society continued their grant of £50 to the Association.

Grants were allocated to local societies on the following scale :—

1. Societies testing at intervals of not more than twenty-one days :—

(*a*) The hire of the necessary milk-testing appliances free of annual charge, the society to upkeep the apparatus in good condition.
(*b*) An annual grant of 50s. to each new member in his first or second year, and of 15s. to each member in his third or fourth year.
(*c*) An annual grant of 14s. per member towards the cost of surprise check tests.

2. Societies testing at intervals of from twenty-two to twenty-eight days :—

(*a*) The hire of the necessary milk-testing appliances free of annual charge, the society to upkeep the apparatus in good condition.
(*b*) An annual grant of 30s. to each new member in his first or second year, and of 15s. to each member in his third or fourth year.
(*c*) An annual grant of 12s. 6d. per member towards the cost of surprise check tests.

During the latter part of 1924 every effort was made to obtain additional applications for membership of local societies in 1925 throughout the various dairying districts of Scotland, and 87 definite applications were received. But, for various reasons, such as the continued depression in the industry, and members disposing of their dairy herds, or changing their farms, abortion in herds, &c., there were more than the usual number of resignations. Also, a few of the new applicants could not be accommodated in existing or new local societies, owing to full membership or to their isolated position.

All the local societies which operated in 1924 continued in 1925. The number of recorders' circuits was 42 (including the two single member societies in Caithness and Orkney). The number of herds officially tested was 711, compared with 703 in 1924. The total number of cows officially tested in 1925 was 28,410, compared with 27,884 in the previous year, an increase of 526 cows, and the largest number in the history of the Association.

The following is a list of the Milk Recording Societies which operated in 1925, with the name and address of the secretary of each society :—

Name of the Society.	Secretary.
Caithness	Mr John Robson, Jun , Lynegar, Watten.
Central and South Ayrshire (4 Circuits)	Mr E. A. Bell, M.A., B.Sc., 239 High Street, Ayr.
Central Ayrshire No. 2	Mr James Cochrane, N.D.A., Holmes Farm, Kilmarnock.
Dumbartonshire	Mr John Bilsland, Quay Place, Dumbarton.
Dumfriesshire (4 Circuits)	Mr Thomas Henderson, Solicitor, Lockerbie.
East Kilbride and District	Mr Arthur Gilmour, C.A., 13 Silvergrove Street, Glasgow.
East Lothian	Mr James L. Nisbet, Easter Newton, Kirknewton.
East Stirlingshire	Mr Robert M. Reid, The Glen Farm, Falkirk.
Fenwick (High)	Mr James Mather, Low Gainford, Fenwick.
Fife (2 Circuits)	Mr William Macniven, Royal Bank, Kirkcaldy.
Highland	Mr J. M. Hunter, Queensgate, Inverness.
Islay	Mr D. M'Millan, Eorrabus, Bridgend.
"John Speir"	Mr William Longwill, Hawhill, Dalry.
Kintyre	Mr Robert Young, Drum, Kilkenzie.
Lesmahagow	Mr Gavin Hamilton, British Linen Bank, Lesmahagow.
Lower Wigtownshire (2 Circuits)	Mr David Breckenridge, Solicitor, Newton-Stewart.
Montgomerie	Mr Robert Laird, Lawthorn, Irvine.
North of Scotland	Mr John A. Carlyle, B.Sc., Prudential Buildings, Arbroath.
Orkney	Mrs Hope B. Sutherland, Rothiesholm, Stronsay.
Renfrew and Bute (2 Circuits)	Mr Thomas Hunter, Solicitor, 24 High Street, Paisley.
Renfrewshire (Upper Ward)	Mr William Henderson, Old Crookston, Nitshill.
Rhins of Galloway (4 Circuits)	Mr John Gibson, Solicitor, Stranraer.
Roxburgh and District	Colonel A. Haddon, Solicitor, Hawick.
Stewarton and Dunlop	Mr John Craig, Cauldhame, Dunlop
Stewartry of Kirkcudbright (5 Circuits)	Mr Patrick Gifford, Solicitor, Castle-Douglas.
West Lothian	Mr John Crooks, Little Ochiltree, Uphall

SEASON 1925.

The table on the following page shows for each society the number of herds, the number of cows tested, the average interval between the tests, and the duration of the recording season :—

Name of the Society or Circuit.	No. of Herds.	No. of Cows Tested	Average interval between Tests, in Days.	Duration of Recording Season, in weeks.
1. Caithness	1	9	21	52
Central and South Ayrshire—				
2. Cumnock and Auchinleck	17	555	21	52
3. Girvan and Maybole	18	806	21	52
4. Kilmarnock, Galston, & Newmilns	18	678	21	52
5. Ochiltree and District	18	575	21	52
6. Central Ayrshire No. 2	11	413	21	52
7. Dumbartonshire	22	626	28	52
Dumfriesshire—				
8. Lower Annandale	18	713	25	52
9. Upper Annandale	19	740	25	52
10. Lower Nithsdale	19	807	25	52
11. Upper Nithsdale	20	809	25	52
12. East Kilbride and District	20	722	28	52
13. East Lothian	16	353	21	52
14. East Stirlingshire	17	603	21	52
15. Fenwick (High)	15	508	21	52
Fife—				
16. Dunfermline and Kirkcaldy	19	709	28	52
17. Cupar-Fife and Perth	21	454	28	52
18. Highland	21	536	28	52
19. Islay	7	170	21	39
20. "John Speir"	18	524	21	52
21. Kintyre	19	852	28	52
22. Lesmahagow	21	600	28	52
Lower Wigtownshire—				
23. Whithorn and Port William	17	893	25	52
24. Newton-Stewart and Wigtown	16	894	25	52
25. Montgomerie	16	498	28	52
26. North of Scotland	22	471	28	52
27. Orkney	1	8	21	52
Renfrew and Bute—				
28. Bute and Inverkip	17	487	21	52
29. Paisley and Kilmacolm	18	461	25	52
30. Renfrewshire (Upper Ward)	17	676	21	52
Rhins of Galloway—				
31. Kirkcolm and District	17	1232	25	52
32. Kirkmaiden and District	14	1182	27	52
33. Luce Valley	17	979	24	52
34. Stranraer and District	17	1225	25	52
35. Roxburgh and District	16	549	21	52
36. Stewarton and Dunlop	21	585	28	52
Stewartry of Kirkcudbright—				
37. Dalbeattie and New Abbey	18	825	24	52
38. Castle-Douglas & New Galloway	17	961	24	52
39. Castle-Douglas and District	18	1082	24	52
40. Kirkcudbright and District	17	970	24	52
41. Borgue, Twynholm, & Gatehouse	18	1027	24	52
42. West Lothian	22	643	28	52
Total No.	711	28,410	...	...

DEFINITIONS.

The milk records compiled by the Association are records of the estimated quantity of milk produced by each cow in a separate lactation, and of the estimated percentage of milk fat contained in the milk. For convenience a gallon of milk was reckoned as 10 lb. A gallon of milk of average quality weighs almost exactly 10¼ lb. The following further particulars concerning each record were also given, wherever possible :—

Name of cow, byre number, and herd-book number.
Sire of cow, and herd-book number of sire.
Dam of cow, and herd-book number of dam.
Date of birth.
Date of calving preceding opening of record.
Number of weeks in milk.
Date of next calving after record closed.

The following particulars of the preceding record were appended to each record, where available :—

Date of calving preceding opening of record.
Quantity of milk in gallons.
Percentage of fat in milk.
Number of weeks in milk.

The milk yields were estimated in respect of quantity and milk-fat percentage from the results of systematic periodic tests by trained recorders approved by the Association. The recorders visited the farms for this purpose at intervals varying from fourteen to twenty-eight days, and each day of visit was regarded as the middle day of the period covered by the visit. Milk records estimated in this way approximate closely to the actual milk yields.

METHOD OF RECORDING ADOPTED—OFFICIAL RECORDS.

A distinctive feature of milk recording in Scotland in 1925, as in former years, was that the official records were entirely the work of trained official recorders. Recorders had previously to undergo a special course of training in milk recording at the Dairy School for Scotland, at Kilmarnock, or other approved College of Agriculture. Only candidates of good character and good general education were selected to attend these courses; and all recorders, before appointment, were approved by the Executive Committee of the Association.

Fuller details of the method of recording adopted will be found in the Association's annual report. The byre sheets were written out in duplicate. The principal copies were posted at regular intervals to the offices of the Association, and the carbon copies left with the respective members. The recorder transferred the results from the extended byre sheet to the milk record book for the herd indelibly in ink, each cow being assigned a separate page, at the top of which full particulars of the cow were entered, including the indelible tattoo marks on the animal.

All byre sheets were carefully revised and corrected in the Association's offices during the season, and a list of the necessary corrections sent to each recorder periodically to be entered in the record books.

Visits of inspection were made to each recorder and to the members of local societies at the different farms periodically throughout the year by members of the Association's staff, and reports thereon submitted to the Executive Committee. The Executive Committee reserved the right to withdraw approval of any recorder at any time or to limit the period of service of any recorder with any particular society. Members of local societies refusing to observe any of the rules of the Association, or deemed to be guilty of conduct injurious to the true interests of milk recording, were liable to be temporarily or permanently suspended.

Another distinctive feature was the surprise check tests, the records of each herd being checked in this way about two or three times throughout the year. The recorder was instructed, by a letter from the superintendent on a date unknown to recorder and owner of herd, to remain at the same farm another day and make another complete twenty-four hours' test. The surprise test results were entered on special buff-coloured byre sheets, and in the record books in red ink immediately below the results of the regular test of the previous day. The buff byre sheets were posted to the Association's offices with the other sheets, and any abnormal differences were immediately noted and reported to the Executive Committee.

As a result of this system of surprise check tests, each page of the 1925 milk record books contains two or three lines of entries in red, comparison of which with the immediately preceding entries provides valuable evidence as to the genuineness of the milk records.

In addition to the surprise check tests made by the recorder, a number of independent surprise tests were made by the Association's staff, in order to check the recorders' work.

All records were closed at the end of December, the current lactations being carried forward to the new books of the following year. Finally, summary sheets were written out in duplicate showing the total milk yields for each cow for the lactation or part lactation, with full particulars of the cow, dates of calving, &c. The principal copy of the summary sheet was posted to the Association's offices with the record book, and the second copy left with the owner of the herd.

All record books and summary sheets were carefully revised, corrected in detail, and initialled in the Association's offices during the next few months, the record books being returned later to the respective members, and the summary sheets retained and bound for future reference.

The milk records were next classified into three groups, for cows and heifers respectively, on the following basis. Experience has confirmed the view that a very useful comparison is obtained by reckoning the yields at their estimated equivalent of milk of 1 per cent fat. Such a comparison takes into consideration both the quantity and the quality of the milk.

Cows with a milk record equivalent to not less than 2500 gallons at 1 per cent fat, and heifers with a milk record equivalent to not less than 2000 gallons at 1 per cent fat, were grouped into Class I. Cows and heifers with milk records of less than two-thirds of these amounts—viz., 1660 and 1330 gallons respectively—were grouped into Class III.

The following short table shows the corresponding values of these yields in fairly good milk of 3·5 per cent milk fat :—

Class	Yield in Milk of 1 per cent Fat. (Gallons)	Corresponding Yield in Milk of 3 5 per cent Fat (Gallons.)
Cows in Class I . .	Not less than 2500 .	714
Heifers in Class I. .	Not less than 2000	571
Cows in Class III. .	Less than 1660 .	474
Heifers in Class III. .	Less than 1330 .	380

All cows and heifers falling between these limits would come into Class II. Such animals naturally claim less attention than the good milkers or the obviously unprofitable animals. It should be noted, however, that Class II. would include a certain number of unclassified yields, as there were a number of instances where, from various causes, the results of a whole normal lactation could not be obtained.

The Association will shortly publish an Annual Report giving all details of the work of the Association, and of each local Milk Recording Society during 1925. This report will include tables showing for each farm the number of cows and heifers tested and the number and percentage included in Classes I. and III. respectively. Each herd is included under the respective local society, but is represented only by an alphabetical letter, the owner being advised privately of the identity in the report of his own herd or herds. From these tables any member may see at a glance how his herd compares with other herds in the same or any other district, and the improvement in his own herd compared with previous years. The report will also show in tabular form the percentage of Class I. and Class III. animals of all animals tested under the Association's scheme during the year, and will thus afford a valuable indication of the progress in milk production generally.

An important feature of the Association's annual reports, from 1917 inclusive, is the register of good milking cows with the names and addresses of owners and full particulars of the milk records. This register includes only the records of animals with a milk yield equivalent to not less than 2800 gallons containing 1 per cent of milk fat in the case of a cow, and 2240 gallons containing 1 per cent of milk fat in the case of a heifer, and is further restricted to animals which completed their lactation before the end of the year and gave birth to another calf before 1st May of the year following. The fullest available particulars of each record are given, and all lists of records are submitted to the owners of the respective animals for revision before publication. The register is of great value to all interested in increased milk production and in the breeding and rearing of animals of the best milking strains, and is invaluable for reference.

It should always be kept in mind when making a comparison of cows in different herds or in different districts, that the different methods of dairying practised have a considerable influence on the milk yields, and that therefore milk yields alone do not necessarily indicate the true relative inherent or hereditary milking qualities of the animal. But the authenticated milk records compiled by the Association are of inestimable value to breeders and owners of dairy cows if properly interpreted.

REVIEW OF 1925—OFFICIAL RECORDS.

Recording was carried on in 1925 by 42 local societies or circuits, comprising 711 members, compared with 703 members in the previous year, a net increase of 8 members. The number of cows tested in 1925 was 28,410, compared with 27,884 in 1924, an increase of 526 cows, and the largest number officially tested in the history of the Association.

During the year 14 recorders, for various reasons, terminated their engagements. The Executive Committee, however, in the same period approved of 15 applicants for the position of milk recorder, and were able to recommend a sufficient number of qualified recorders. Fifteen women recorders were employed in 1925, and 38 men recorders.

In this connection the Committee, as formerly, were indebted to the West of Scotland Agricultural College for giving special courses of instruction for milk recorders to meet the Association's requirements. Only one special course was required in 1925—namely, in December. Fifteen selected candidates attended the course, and 13 obtained the certificate.

The Executive Committee purchased the supplies of milk-testing apparatus, sulphuric acid, and amylic alcohol for local societies, as in previous years.

The system of surprise check tests, introduced in 1920, was continued in 1925. The total number of check tests made by recorders during the season was 1306, or an average of approximately two check tests per herd tested throughout the whole season. In only one instance in 1925 was the average milk yield for the herd more than 3 lb. milk daily less on the occasion of a check test, as compared with the previous day, and in this instance explanations were submitted by the owner and accepted by the Committee Only two herds showed an average of over 2½ lb. less, including the herd already referred to ; and only four herds an average of over 2 lb. less. In addition to the surprise tests arranged for and carried out by the recorders, the Assistant Superintendent made 44 special check tests of different herds. The results in most instances agreed very closely in regard both to average milk yields and fat percentages with those of the recorders' previous tests. Only 4 herds showed an average daily yield of over 2 lb. less on the occasion of a special check test ; and only 1 herd had an average of over 2 lb. more. With regard to average fat percentages, no herd showed an average fat percentage of over ·3 per cent lower, and only 4 herds an average of over ·3 per cent higher. With the exception of 13 herds, the average fat percentages were all within ·2 per cent of those obtained by the recorders at the previous tests.

With regard to the general conditions for milk production in 1925, outstanding features were the frequent rains and low temperatures during the spring and early summer months, and the unusually dry and sunny weather of June and July. Owing to the cold wet weather grass came later than usual, and was scarce in the early part of the season. The abnormally dry warm weather which followed produced only a temporary improvement. Afterwards, pastures suffered severely from the prolonged drought, particularly on the drier classes of soil. The yield of hay and root crops was also considerably under average.

Other important factors adversely affecting milk yields were the relatively high costs of purchased foods and the difficulty of disposing of all milk produced at ordinary contract prices. In view of the high cost of feeding and the relatively small prices obtainable for "surplus milk," herd owners were not disposed to liberal feeding to stimulate production.

On the other hand, the mild weather during the autumn was favourable for later growth, and allowed cows to remain out-of-doors longer than is customary; and the quality of the grass, hay, and root crops was good.

But, taken on the whole, the year was not favourable for high milk yields; and it may be assumed that the average milk yield per cow in Scotland in 1925 was considerably below average.

In the case of recorded herds, other conditions militated against a higher average yield. As in recent years, a very considerable proportion of herds which had been recorded for a period of years were entirely dispersed, or for other reasons already referred to did not continue to be recorded, while a proportionately large number of "new herds," or herds tested for not more than three years, were included. The proportion of regular "milk record herds" was thereby correspondingly reduced.

The following table shows for each society or circuit the number and percentage of cows and heifers of each class in 1925, with a comparison of the average results from 1914 to 1925 inclusive:—

Society or Circuit	Cows and Heifers				
	Number			Per Cent	
	Total	Class I	Class III	Class I	Class III
1 Caithness	9	4		41	.
Central and South Ayrshire—					
2. Cumnock and Auchinleck	555	390	14	70	3
3. Girvan and Maybole	806	430	47	55	6*
4. Kilmarnock, Galston, and Newmilns	678	420	26	64	4*
5. Ochiltree and District	575	406	6	76	1
6. Central Ayrshire No. 2	413	326	5	79	2
7. Dumbartonshire	626	392	22	66	4*
Dumfriesshire—					
8. Lower Annandale	713	469	18	67	3*
9. Upper Annandale	740	454	20	68	3*
10. Lower Nithsdale	807	478	53	59	11
11. Upper Nithsdale	809	431	26	57	3*
12. East Kilbride and District	722	421	40	58	6
13. East Lothian	353	263	2	83	1*
14. East Stirlingshire	603	328	21	54	3
15. Fenwick (High)	508	366	18	72	4
Fife—					
16. Dunfermline and Kirkcaldy	709	440	27	68	4*
17. Cupar-Fife and Perth	454	295	32	65	7
18. Highland	536	390	22	73	4

Society or Circuit.	Cows and Heifers.				
	Number.			Per Cent.	
	Total.	Class I.	Class III.	Class I.	Class III.
19. Islay	170	8	30	5	18
20. "John Speir"	524	309	32	59	6
21. Kintyre	852	366	47	43	6
22. Lesmahagow	600	491	6	85	1*
Lower Wigtownshire—					
23. Whithorn and Port William	893	368	78	41	9
24. Newton-Stewart and Wigtown	894	403	38	47	4*
25. Montgomerie	498	328	13	66	3
26. North of Scotland	471	398	3	87	1*
27. Orkney	8	3	1	38	13
Renfrew and Bute—					
28. Bute and Inverkip	487	247	25	54	5*
29. Kilmacolm and District	461	250	23	61	6*
30. Renfrewshire (Upper Ward)	676	324	67	48	10
Rhins of Galloway—					
31. Kirkcolm and District	1232	653	64	55	5
32. Kirkmaiden and District	1182	726	43	62	6
33. Luce Valley	979	499	49	51	5
34. Stranraer and District	1225	813	43	66	4
35. Roxburgh and District	549	347	33	63	6
36. Stewarton and Dunlop	585	370	30	63	5
Stewartry of Kirkcudbright—					
37. Dalbeattie and New Abbey	825	504	42	61	5
38. Castle-Douglas and New Galloway	961	541	42	56	4
39. Castle-Douglas and District	1082	489	68	45	6
40. Kirkcudbright and District	970	483	38	50	4
41. Borgue, Twynholm, and Gatehouse	1027	569	34	55	3
42. West Lothian	643	336	55	58	9*
Of all the cows and heifers tested in 1925	28,410	16,528	1303	60	5*
Comparison with 1924	27,957			65	3
Comparison with 1923	26,952			65	2
Comparison with 1922	27,275			63	2
Comparison with 1921	26,752			58¾	4
Comparison with 1920	24,191			55¼	3¼
Comparison with 1919	20,786			49½	4½
Comparison with 1918	17,827			49	5¾
Comparison with 1917	19,564			50	4¼
Comparison with 1916	22,702			53¼	4¾
Comparison with 1915	26,572			46	6
Comparison with 1914	26,424			39½	9

Excluding herds tested during only a part of the recording season—577 cows in all.

Reviewing the results of the 42 circuits as a whole, we find that of the total of 28,410 cows and heifers tested in 1925, excluding 577 animals in herds tested during only a part of the season, and therefore not classified, 16,528 were included in Class I. and 1303 in Class III. This is equivalent to 60 per cent in Class I., and 5 per cent in Class III. Thus, 60 per cent of all the cows and heifers tested gave a milk yield equivalent to not less than 714 gallons containing 3·5 per cent milk fat in the case of a cow, and 571 gallons in the case of a heifer; while 5 per cent gave a milk yield equivalent to less than 474 gallons containing 3·5 per cent milk fat in the case of a cow, and 380 gallons in the case of a heifer. In 1924, 65 per cent were eligible for Class I., and 3 per cent were included in Class III.

The average standard attained in 1925 was undoubtedly lowered by the inclusion of the large proportion of "new" herds and by the adverse weather and other conditions already referred to, yet it will be observed from the preceding table that the proportion of animals qualifying for inclusion in Class I. in 1925 is only 5 per cent lower than that of 1924 and 1923—namely, 65 per cent,—which is the highest standard reached since the commencement of official milk recording twenty-three years ago.

The majority of regular milk record herds in Scotland have been gradually graded up to a higher natural capacity for production; and with adequate feeding and otherwise favourable conditions they are quite capable of producing still higher yields.

It is hoped that the present unfortunate "surplus milk" difficulty will soon disappear. The obvious solution is for milk producers generally to arrange for fewer cows calving in autumn and winter when costs of production are relatively high, and to produce all milk in excess of actual requirements for winter sale during the grazing season at much lower cost. If summer and winter production could be properly regulated in this way there would be practically no "surplus" milk, and greater inducement for herd owners to stimulate milk production by liberal well-balanced feeding to the highest natural capacity of the herd.

But no matter what the other conditions may be, it is quite evident that the dairy herd with the higher inherent capacity for production will always give the better return; and in this respect milk record herds have a considerable advantage over the ordinary herds of the country.

NEW SCHEME OF PRIVATE OR UNOFFICIAL MILK RECORDS.

The Association's new scheme of private or unofficial milk records was inaugurated in 1924 and continued in 1925.

The total grant from the Development Fund for 1925 was limited to £160.

The chief objects of the scheme are to establish milk recording on a wider and more popular basis, and to induce a greater number ultimately to adopt the system of official authenticated milk records.

Milk recording under this scheme was administered directly by the Association. The following inducements were offered to members :—

(*a*) The hire of a set of appliances for testing purposes, free of annual charge, the member to upkeep the apparatus in good condition.
(*b*) Byre sheets and record books free of charge, with stamped addressed envelopes for return of byre sheets.
(*c*) All calculations in byre sheets and record books to be made in the Superintendent's office, and the sheets and record books to be returned to the herd owners duly extended and completed.
(*d*) The total charge on members to be limited to an annual subscription to the Association at the rate of 1s. 6d. per cow tested.

The total number of herds included in 1924 was 76, and the total number of cows 1636, an average of 22 cows per herd.

Sixty-six of the 76 members of 1924 continued in 1925, and 91 new members were enrolled. One herd was withdrawn owing to the death of the owner, and one herd was transferred to the scheme of official records after a short period of recording. The total membership for 1925 was 155, or rather more than double that of the previous year. The total number of cows included was 3283, an average of 21 cows per herd.

The following is a brief outline of the method of recording adopted :—

All cows in the herd yielding milk must be included in the record. Each cow must be clearly distinguished in the byre by a stall number on the wall. On the occasion of a test the cows must be milked in the same rotation evening and morning, and care must be taken that the milk of each cow for twenty-four hours, and for twenty-four hours only, is included in the test. The owner, or his agent, is required to weigh the milk of each cow evening and next morning, by means of the spring balance and pail provided, once every twenty-one to twenty-eight days, and to enter the results and other necessary particulars in the byre sheet provided by the Association; and each byre sheet must be signed by the owner, or on his behalf, as correct in respect of all entries made. The byre sheet is sent by first post to the

Superintendent, and calculated and extended by the Association's staff, and returned to the owner as soon as completed. A milk record book for each herd is written out in the Association's office. The record books are closed at the end of the recording season as at 30th November, and the results summarised and entered in special summary sheets. The record books and copies of the summary sheets, when completed and checked, are sent to the respective owners of the herds.

It must, of course, be clearly understood that the milk records compiled under this scheme are purely unofficial unauthenticated records, and have no connection with the official authenticated milk records of the Association.

On the whole, members under this scheme have carried out their obligations satisfactorily. The milk has been weighed and the byre sheets posted to the Association's office with great regularity; and a number of letters have been received from, and opinions expressed by, members indicating that they are obtaining very useful guidance from the records. Several members have recommended the scheme to other farmers, or forwarded the names and addresses of likely new members.

The total number of herds recorded, officially or unofficially, in 1925 was 866, and the total number of cows recorded 31,693, an increase of 163 herds and 4741 cows as compared with 1923, or of 23 per cent and 18 per cent respectively. Such progress in the milk recording movement in Scotland is all the more gratifying in view of the difficulty the majority of agricultural societies or associations are experiencing in maintaining their membership. Assuming the number of milking cows of the recognised dairy breeds in Scotland to be approximately 200,000, the proportion recorded in 1925 was about 16 per cent.

PROSPECTS FOR 1926.

Further efforts were made to obtain additional applications for membership of local societies in 1926. With the scheme of private or unofficial milk records now in operation it was possible to carry out propaganda work for both schemes simultaneously, and over 2000 circular and other letters, with propaganda literature giving particulars of both systems of recording and forms of application, were distributed to over 1500 dairy herd owners throughout Scotland, whose names and addresses had been compiled locally and forwarded to the Superintendent. Applications were invited also through press advertisements, articles, &c., and members of the Association and members generally, and all recorders were requested individually to endeavour to obtain new members for either scheme in their respective districts. In addition no fewer than 866 personal visits were made by the Association's staff in an endeavour to obtain new members throughout Scotland. But the severe depression in dairy farming which has existed for several years is evidently having a cumulative effect on herd owners, who are seeking to cut down expenditure in every possible direction; and there is the greatest difficulty in persuading them to adopt any new scheme entailing the least additional expenditure. The number of definite new applications for official records for season 1926 obtained to date is 92, and a number of prospective new members for 1927 have also been obtained.

All the local societies of 1925 have continued in 1926, the majority of them with the maximum membership. A new circuit has been formed by the North of Scotland Society in the districts around Aberdeen. The number of recorders' circuits in 1926 is 43; the number of herds officially tested should be approximately 729, and the number of cows officially tested proportionately increased to about 29,000.

The Committee are in a position to recommend a sufficient number of qualified recorders. All vacancies at the beginning of the year have been filled, and there remain a number of approved recorders on the waiting list. In this connection the Committee, as formerly, are indebted to the West of Scotland Agricultural College for giving special courses of instruction for milk recorders to meet the Association's requirements. Only one special course was required in 1925—namely, in December. Fifteen selected candidates attended the course, and 13 obtained the certificate.

The Committee have arranged for supplies of sulphuric acid, amylic alcohol, and milk-testing apparatus for local societies in 1926.

With regard to unofficial records, the number of new members for 1926 obtained at time of writing is 59, with approximately 1169 cows, and these have all been supplied with the necessary milk-weighing apparatus and stationery, and in most cases have already commenced recording. Three of the herds were transferred to the scheme of official records before recording actually commenced. One hundred and thirty-seven of the 155 members of 1925 have continued their membership in 1926. Eighteen members have resigned, and have returned the milk-weighing outfits lent to them under this scheme. The total membership at present is 193, with approximately 4068 cows, or an average of 21 cows per herd; an increase of 38 herds and 758 cows from the previous year.

The total number of herds recorded, officially or unofficially, in 1926 will be approximately 922, compared with 866 in 1925, an increase of 56 herds, or over 6 per cent. The total number of cows will be approximately 33,068.

GENERAL REVIEW.

The Association have now been in existence over a period of twenty-three years, and as their main object have endeavoured to assist dairy herd owners to improve the milk yield of their herds and to increase their profits. They have sought to do this in a particular way, by showing in the form of reliable records the actual performance of each individual cow; in the first instance for the information of the owner himself, and also to verify the yields for intending purchasers of the stock or of the progeny.

Such records are of little account in themselves, as mere recording will not increase milk; they depend for their real value upon the way in which they are applied, and chiefly upon the initiative and intelligence of the farmer himself. Great progress in milk production among members of milk recording societies has resulted, but there is still much scope for further improvement. The fullest use has not yet been made of the milk records by the owners of recorded herds generally.

Milk records open direct paths towards herd improvement in several directions, the chief of which are rigid selection, skilful breeding, and economic feeding. Probably the general principles of selection and breeding have been more fully grasped by the average member, and the greatest need at the present time is for a fuller appreciation of what could be affected by a more definite application of the established principles of feeding for milk production. It has long been evident, and has been reiterated in the annual reports of the Association, that the majority of good-milking cows have not been adequately fed. Many owners would do better with fewer cows better fed. Emphasis requires to be laid upon the advantages of feeding individually with a well-balanced ration according to production.

It is encouraging, however, to find in several quarters recently a desire for a closer co-ordination of milk recording and scientific rationing. Various schemes have been suggested, and several are already in operation on a limited scale elsewhere, based mainly upon advice to members by technical experts in the form of criticism and suggestions.

The Executive Committee have had the matter under special consideration during the past year. It was a former practice of the Association to record the average ration in the byre sheet at each test. But this was discontinued a number of years ago as of little value and often misleading, owing to the difficulty of obtaining accurate data, and to the fact that all the cows in a herd were not fed on the average ration. It was found impracticable to combine reliable food records with authenticated milk records. Any useful system of co-ordinating the two could only be individual to the herd and private to the herd owner; and any advisory scheme based thereon must necessarily be restricted in its operation.

It was realised, however, that the recorder's byre sheet offered a good opportunity for advisory work on economic feeding by trained experts, but it was felt that this was more directly the sphere of the agricultural colleges through their county staffs; and members are recommended to obtain the assistance of the colleges in this connection as far as possible.

The Committee considered that much might be achieved in a more general way by preparing and issuing to all members a printed memorandum or leaflet containing practical information in a concise form on the approved methods of feeding dairy cows with properly balanced rations according to their individual daily yields, and showing a selection of rations applicable to practically all cases. A special Sub-Committee was appointed for this purpose, and a leaflet has been prepared, based largely upon a recent Bulletin, No. 106, of the West of Scotland Agricultural College. Much of the information, in an abbreviated form, is given below.

The Association are confident that considerable benefit will accrue to individual members who will seek earnestly to follow the advice given. They hope also that one effect of giving assistance to members in this form will be to diminish the number of resignations which take place annually; as one cause of herd owners discontinuing recording is evidently disappointment with the records obtained.

It is essential that feeding shall stimulate production to the full economic capacity of the herd. If good pastures are available the summer feeding is a simple matter. Winter feeding is generally a more difficult proposition.

The chief function of the ration is to provide the cow with nutrients for the maintenance of her body, and for the production of milk. The nutrients in the ration can be divided into two main groups—(1) the proteins; and (2) the carbohydrates and fats, or the energy-furnishing constituents; and these must always be provided in quantities suited to the maintenance and production requirements of the cow. Vitamines and minerals need not be considered here, as these are generally present in sufficient quantities, provided the ration is otherwise suitable.

A good ration must be palatable, so that the cow will be induced to consume all she requires for heavy milk production. It should also be bulky, provide some succulence, and have a laxative effect. The bulky portion of the ration is best provided in the form of good hay, but in addition there should be other bulky constituents in the concentrate allowance, such as bruised oats and wheat bran. Succulent foods such as roots and silage are palatable, and have a beneficial laxative action; they also provide part of the large amount of water required by the heavy producing cow. Where succulent foods are not available, foods like wheat bran and linseed cake should be included.

Variety in the ration is essential. If sufficient variety be provided there is little danger of the ration being deficient in minerals or vitamines, while a mixture of proteins from different sources is more valuable than the proteins supplied by one plant. As a general rule a good winter ration will consist of a dry roughage such as hay, a succulent roughage such as roots or silage, and at least three concentrates.

Milk producing cows must be considered as individuals and fed according to production. If all are fed alike only average production need be expected. In general practice all cows will be given about the same amount of roughage—what they will clean up in a reasonable time—and the concentrates will be fed according to production. Once the mixture of concentrates is made up it is a simple matter to have a measure of known capacity with which these may be fed according to the production of the individuals within the herd.

The dairy cow provides a satisfactory means of disposing profitably of home-grown foods, and some effort should be made to grow in suitable quantity the foods she requires. Succulent food such as roots or silage should be provided, and wherever possible good hay. On the majority of farms some straw must be fed, but at least half of the dry roughage allowance should consist of hay.

Home-grown cereals, oats and barley, form a valuable source of energy for the dairy cow, and serve as an economical basis on which to found the concentrate allowance. The purchase of other energy-providing foods, such as maize, must be based on their relative prices as compared with the home-grown cereals.

It is seldom possible to have a sufficient supply of home protein concentrates unless beans or peas are grown, and protein-rich foods must generally be purchased. In purchasing foods of this kind, such as soybean meal, cotton-seed cake, earthnut cake, &c., the main point to consider is the cost of the digestible crude protein which they provide; care should also be taken to ensure that the purchased food fits in with the other constituents of the ration.

The roughages provided should furnish enough nutrients for maintenance and the production of the first gallon of milk, and can be considered as the basal ration to which concentrates are added for further production. In the examples given the cow is considered as being of 9 cwt. live-weight;

for larger or smaller animals the allowance of roughage can be proportionately altered.

A good basal ration is :—

40 lb. Swedes.
16 lb. Hay.

As substitutes for 40 lb. swedes, the following can be used :—

50 lb. Turnips or cabbages.
40 lb. Mangolds.
20 lb. Sugar beets or potatoes.
25 lb. Silage.
6 lb. Dried beet pulp.

In ordinary circumstances the available supply of roots and hay will vary from time to time, and the basal ration must be altered to suit the conditions. It may be taken that 1 lb. of hay is the equivalent of 5 lb. of swedes, and the proportion of hay and roots may be varied accordingly. Where no roots are fed, ½ to 1 lb. of treacle per day should be added to the ration. When straw must be fed, an extra ½ lb. of bean meal or of one of the concentrate mixtures recommended below should be allowed for every 4 lb. of hay replaced by straw.

When the production of milk goes above one gallon daily, some concentrates must be fed in addition to the basal ration. The concentrate mixture will depend very largely on the supply of home-grown foods and the relative cost of purchased foods. Many mixtures might be given, but only a limited number are selected as examples.

The concentrate mixtures included in the table following are divided into two groups—those suitable where a succulent roughage is fed, and those that can be used where no succulence is available. The rate at which the mixtures should be fed varies according to their composition. The first gallon of milk is provided for in the basal ration, and so only the amount of the mixture required for each gallon of milk *after the first gallon* is stated. Where 3½ lb. of mixture is recommended this means that a cow giving three gallons of milk per day should receive 7 lb. of the mixture daily.

Only a few concentrates are included, but any one of these can be replaced by another of similar composition and character when prices indicate this to be desirable. Generally a fair amount of grain mixture is made up at one time. Consequently the amounts of food required for the mixtures are stated in cwts., and the proportions are such that each mixture is half a ton. Greater or smaller amounts may be mixed as required, but the same proportions should be maintained.

Draff can be claimed as either a roughage or a concentrate, as it possesses some of the properties of both. However, if it be remembered that 14 lb. of draff are sufficient for the production of one gallon of milk it is easy to work it into the ration.

CONCENTRATE MIXTURES.*

Feed with	Succulence.												No Succulence.		
Pounds per gallon of milk after first gallon.	3½						4						3½	4	
Mixture No.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	XV.
Barley . . .		...	...	...	...	4	...	4	...	...	...	2	...	...	2
Maize	2	3	1	3	3	...	...	...	...	...	...	...	3	...	...
Oats (bruised) . .	2	...	..	2	...	...	5	2	6	4	4	2	3	3	2
Wheat bran . .	2	..	2	...	...	...	2	2	...	2	...	...	...	2	3
Brewers' dried grains .	...	2	...	..	...	...	...	...	...	...	3	3	...	...	...
Palmnut cake . .	...	. .	...	2	2	...	...	...	...	...	...	...	...	...	...
Distillers' dried grains		...	...	...	3	3	1	...	...	...	...	...	...	...	...
Bean meal . . .	2	3	7	...	2	...	...	...	3	...	...	...	...	3	...
Linseed cake . .	...	...	...	...	...	...	...	...	...	2	...	...	3	2	...
Undecorticated earthnut cake . . .	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...
Decorticated cotton cake	2	...	..	...	...	...	...	...	...	..	...	...	...	...	...
Soybean meal . .	...	..	...	...	...	...	2	...	..	2	3	3	...	...	3
Decorticated earthnut cake . . .	.	2	...	3	...	...	...	2	...	...	...	...	...	...	...
Fish meal . . .	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...
Total Weight of Mixture, Cwts. .	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

* This Table is taken from Bulletin No. 106 of The West of Scotland Agricultural College, which treats of the feeding of dairy cows in greater detail.

The following is given as an example, to illustrate the method of rationing for a 9-cwt. cow giving 4 gallons of milk daily. If 30 lb. of swedes per cow daily are available, then the hay allowance should be 18 lb. This basal ration will provide for the maintenance of the cow and the first gallon of milk, so the concentrate allowance is required only for the production of the remaining 3 gallons of milk. Assuming there is a fair allowance of succulence, any of the concentrate mixtures recommended for use with a succulent roughage will be suitable. If oats are plentiful, and soybean meal is relatively cheap, then Mixture No. VII. will be satisfactory, namely, 5 cwt. bruised oats, 2 cwt. wheat bran, 1 cwt. distillers' dried grains, and 2 cwt. soybean meal. It is to be fed at the rate of 4 lb. per gallon of milk *after the first gallon*, so 12 lb. of the mixture will be required daily. A good ration under the circumstances will therefore be:—

30 lb. Swedes.
18 lb. Hay.
12 lb. Mixture No. VII.

ANALYSES FOR MEMBERS DURING 1925.

By Dr J. F. Tocher, Aberdeen, Analyst to the Society.

The number of samples submitted for analysis during the year 1925 was 272, of which 81 were fertilisers, 56 were feeding-stuffs, 46 were milks, 51 were waters, 7 were soils, and there were 18 examinations for poisons and 13 miscellaneous samples. The following table (Table I.) shows the numbers and nature of the samples analysed during the past six years :—

Table I.

	1925.	1924.	1923.	1922.	1921.	1920.
Fertilisers . . .	81	82	84	86	90	56
Feeding-stuffs . .	56	59	44	29	28	42
Waters . . .	51	35	37	23	22	21
Other samples . .	84	94	96	76	81	89
Total . . .	272	270	261	214	221	208

Fertilisers.

General.—The fertilisers examined may be classified as follows :—

Table II.

Compound fertilisers . .	31
Potash fertilisers . .	3
Insoluble phosphatic fertilisers	19
Superphosphates . .	4
Nitrogenous and other fertilisers	16
Limes and limestones . .	8
	81

The average composition of compound fertilisers for 1925 was found to be 5·4 per cent nitrogen, 16·3 per cent soluble phosphate, 6·2 per cent insoluble phosphate, and 6·4 per cent potash. The following table (Table III.) shows the composition of the compound fertilisers examined during the year :—

TABLE III.

	Nitrogen.	Soluble phosphate.	Citric soluble phosphate.	Insoluble phosphate.	Potash.
Compound manure . .	4·89	17·60	...	10·05	4·63
" . .	4·74	16·90	...	9·35	4·50
" . .	7·58	16·00	3·13	2·65	3·88
" . .	5·52	16·66	2·75	3·00	4·14
" . .	4·45	18·85	1·40	0·59	6·88
" . .	5·10	19·00	3·48	1·82	6·22
" . .	5·17	16·79	1·22	0·31	8·42
" . .	5·00	12·57	0·42	0·73	12·80
" . .	4·35	16·44	0·60	0·42	9·19
" . .	4·35	14·66	0·28	0·56	11·18
" . .	2·16	19·62	7·19	10·02	4·00
" . .	5·00	17·39	0·54	0·57	6·97
" . .	4·53	15·50	0·67	0·66	9·27
" . .	5·35	13·96	0·84	0·35	10·04
" . .	5·22	13·06	0·52	0·41	12·38
" . .	8·78	18·29	0·70	0·35	3·54
" . .	3·00	17·90	1·09	0·98	10·43
Potato manure . .	6·92	15·36	2·32	3·02	4·63
" . .	6·58	16·35	4·71	2·50	5·05
" . .	4·89	16·06	...	8·45	10·47
" . .	5·28	15·43	...	8·87	9·46
" . .	7·01	13·69	6·70	2·86	5·80
" . .	8·06	17·60	0·63	1·71	3·03
" . .	5·33	12·92	...	9·64	5·84
" . .	4·25	19·26	1·41	0·41	6·00
Turnip manure . .	1·53	26·73	2·26	3·23	3·21
Bean manure . . .	2·27	12·36	...	25·16	4·02
Early potato manure .	7·91	16·65	3·35	2·02	2·51
" . .	7·88	13·76	4·53	2·48	2·90
" . .	7·65	13·65	4·30	2·61	3·17
" . .	7·65	14·97	3·91	2·65	3·05

The nitrogen in the compound fertilisers ranged from 1·53 to 8·78 per cent. The variation in soluble phosphate was from 12·36 to 26·73 per cent. The proportion of insoluble phosphate varied from 0·31 to 25·16 per cent, while the proportion of potash varied from 2·51 to 12·80 per cent.

Samples of ground mineral phosphate were examined, with the undernoted results :—

TABLE IV.

	Total phosphate.	Fineness.
Mineral phosphate . .	55·92	80
"	58·83	96·90
"	54·18	81·65
(Morocco) .	73·31	...
(North African)	...	87·10
. . . . .	73·92	...
(North African)	64·66	. .

These results show that the total phosphate ranged from 54 to 73 per cent. A sample of potassic mineral phosphate was analysed and was found to contain 43·15 per cent insoluble phosphate and 9·2 per cent potash. It has been suggested that there is a higher degree of citric solubility in potassic mineral phosphate when compared with ordinary mineral phosphate, but this is an argument which cannot be sustained. In the first place, when a sample of potassic mineral phosphate is taken for analysis, the quantity prescribed by the Board of Agriculture being 5 grammes, a lesser proportion than 5 grammes of mineral phosphate is exposed to citric acid action. I have shown that the smaller the quantity of mineral phosphate taken for analysis the higher is the citric solubility per cent of the weight taken. In other words, since citric solubility depends upon the quantity of fertiliser taken and upon the proportion of alkaline lime present, it does not convey any meaning to the purchaser with reference to fertilising value. One sample had an exceptional degree of fineness, 89 per cent of the powder passing through a sieve with 120 meshes to the linear inch. The samples of bone meal were rather variable in composition, the phosphatic content varying from 30 to 51 per cent. A sample of bone and meat meal was found to contain 6·9 per cent nitrogen, and 27 per cent total phosphate. The sample contained a large percentage of oil, but this did not in any way interfere with its sowable condition, and cannot be regarded as affecting in any way the efficiency of the fertilising constituents of the substance. The samples of Peruvian guano had the following average composition: nitrogen 9 per cent, phosphate 16·93 per cent, and potash 2·30 per cent. A sample of moss litter manure was found to contain nearly 1 per cent of nitrogen, one-quarter of which was soluble and three-quarters insoluble. There was also present 1 per cent of insoluble phosphate, and nearly 1 per cent of potash. All the samples of sulphate of ammonia contained 21·2 per cent of nitrogen. The proportions of caustic lime in samples of ground lime varied from 40 to 71 per cent. One sample was much below the guarantee in caustic lime, and this was found to be due to the exposure of the ground lime on keeping. Caustic lime on keeping is gradually reconverted into calcium carbonate. The undernoted table (Table V.) shows the composition of the samples of basic slag analysed. It will be seen that the total phosphate ranges from 25 to 46 per cent, while the degree of fineness of grinding varies from 83 to 98 per cent of the powder passing through the standard sieve with 100 meshes to the linear inch.

TABLE V.

	Total phosphate.	Fineness.
Basic slag	30·58	91·85
"	46·22	83·00
"	27·23	85·60
"	24·96	98·20
"	38·68	...
"	34·21	...
"	34·78	...

FEEDING-STUFFS.

A large number of feeding-stuffs were analysed during 1925, including the usual feed-cakes and such feeding-stuffs as pig meal, knackery pig meal, fish meal, barley meal, parings, calf meal, ground tapioca roots, coffee bean husks, dried grains, and bone and meat meal. See the following table (Table VI.).

TABLE VI.

	Oil.	Albuminoids.	Soluble carbohydrates.	Fibre.	Ash.	Moisture.
Cake	15·01	26·31	...	...	...	...
Pure white fish meal	5·17	59·31	...	...	...	...
Fish meal	6·78	57·08	...	...	...	...
Pig meal	4·24	17·94	45·51	12·67	9·02	10·62
"	5·42	17·25	44·73	12·11	9·58	10·91
"	3·85	17·94	47·13	10·70	9·81	10·57
"	3·68	17·94	48·44	10·13	8·94	10·87
"	5·04	17·56	42·28	10·96	12·67	11·47
Knackery pig meal	14·75	44·00	3·37	1·33	31·34	5·21
Turnips	0·30	1·07	7·14	0·96	0·69	89·84
"	0·28	1·03	6·89	1·06	0·69	90·05
"	0·23	0·74	7·82	0·91	0·57	89·73
Dairy meal	11·13	18·06	43·85	8·49	6·79	11·68
Bran	4·34	18·12	...	...	...	...
Barley meal	4·80	12·19	64·13	3·73	3·05	12·01
Decorticated cotton meal	11·67	38·06	29·05	4·43	6·78	10·01
Bombay cotton cake	4·17	18·12	...	...	...	...
Cream calf meal	4·08	18·00	61·60	2·20	3·22	10·90
Parings	4·68	15·50	55·96	7·57	3·86	12·43
Calf meal	8·00	16·81	60·99	1·53	2·69	9·98
Ground tapioca roots	0·53	1·44	82·22	1·90	2·04	11·87
Bombay cotton-cake	4·59	18·75	36·69	22·67	5·34	11·96
Linseed-cake	7·37	32·81	...	...	...	...
"	6·90	33·25	...	...	...	...
"	7·01	34·31	...	...	...	...
Coffee bean husks	0·70	1·75	17·27	68·50	0·73	11·05
Dried coffee and chicory residue	9·62	11·44	36·42	31·23	3·78	7·51
Distillers' dried grains	5·30	15·94	47·59	16·90	2·78	11·40
Corn	6·80	9·50	...	...	...	...
Hashed corn	7·06	10·62	...	...	...	...
Calcutta cake	13·26	...	...	...	...	...
Russian linseed-cake	12·00	29·75	...	...	...	...
Sussex ground oats	7·47	12·75	60·86	6·45	2·57	9·90
Dreg	3·68	8·56	...	...	...	...
Distillery dried grains	11·33	21·37	...	...	...	...
Feeding meal	9·00	14·69	...	...	...	...
Pig meal	3·81	10·19	66·25	4·18	3·65	11·92
Barley	2·53	7·12	66·40	5·27	2·25	16·43

From the above table it will be seen that the sample of fish meal contained 6·8 per cent of oil and 57 per cent albuminoids. It should be pointed out that the great majority of makers of fish meal guarantee an oil content of not more than 5 per cent, and it is usual for these manufacturers to guarantee the phosphatic content of the fish meal, as this is an important mineral constituent, and has to be considered in the construction of rations for pigs and other live stock. Several samples of turnips were examined for food values. It should be pointed out that it is extremely difficult to state from the results of analysis of one or two turnips of each variety whether or not the food value of one is significantly greater than the food value of another variety. Indeed, the analysis of samples of turnips for this purpose should be in the hands of research laboratory workers, where such work is carried on, and where there is a large staff of competent analysts with sufficient time to carry out a long series of analyses on individual turnips of the various varieties. Only in this way can it be ascertained by chemical and statistical analyses what particular variety under given conditions gives the highest food value. The same holds good with respect to the examination of samples of beets. A sample of a brown substance reputed to be a certain cure for abortion, proved to be a mixture of brown sugar and bran. The sample of bone and meat meal contained 12 per cent oil and 44 per cent albuminoids. A similar feeding-stuff of animal origin—namely, fish meal, usually contains about 3 per cent oil and about 60 per cent albuminoids. In the case of fish meal, however, it is desirable that the oil content should be low. The oil present in meat meal is not, however, of an objectionable character. The sample of coffee bean husks contained less than 1 per cent oil, about 2 per cent albuminoids, and 17 per cent carbohydrates.

MISCELLANEOUS.

Milks.—A large number of milks were analysed during the year. The proportion of butter-fat in the 46 samples varied from 2·2 to 5·9 per cent, the average being 3·5 per cent. In each case the samples of milk were the bulked milk of a herd. The herds, however, varied widely in size. It will be seen from the table (Table VII.) that nine of the samples were found to be below the presumptive limit of 3 per cent prescribed by the Board of Agriculture, while five of the samples were found to be below the presumptive limit of 8·5 per cent solids not fat.

TABLE VII.

No.	Fat.	Solids not fat.	No.	Fat.	Solids not fat.
1	3·86	8·91	24	3·80	8·81
2	4·20	8·67	25	3·30	8·50
3	5·95	9·00	26	3·73	8·58
4	3·60	8·98	27	3·69	8·65
5	4·20	8·62	28	3·25	8·79
6	3·85	8·54	29	3·75	8·63
7	4·35	8·87	30	3·40	8·63
8	2·44	8·60	31	3·60	8·95
9	2·70	8·91	32	3·70	9·16
10	2·20	8·66	33	3·40	8·86
11	4·20	8·91	34	4·10	8·37
12	4·15	8·87	35	3·80	8·75
13	2·70	9·49	36	4·15	9·14
14	3·02	8·53	37	3·25	9·09
15	3·18	8·45	38	3·40	9·08
16	3·00	8·56	39	4·00	9·07
17	3·25	8·62	40	4·20	8·76
18	3·10	8·70	41	3·00	8·78
19	2·70	8·17	42	2·65	7·97
20	3·20	8·50	43	2·97	8·74
21	3·30	8·76	44	2·81	8·59
22	3·30	8·70	45	3·67	8·61
23	2·96	8·28	46	3·41	8·53

In connection with the analysis of milk, it may be of interest to mention that the results of analyses of 676 samples of milk from *individual* cows, analysed in my laboratory on behalf of the Inter-departmental Committee on Milk (Scotland), 1922, has just been published by the Stationery Office. A statistical analysis of the results shows that variations in each of the constituents of milk are much greater than were hitherto thought possible. In particular, it was found that 8 per cent of all samples of milk from individual cows were below the 3 per cent butter-fat, while 24 per cent of all such samples were below 8·5 per cent solids not fat. A rather remarkable result was found with respect to yield of milk. On an average the greater the yield of milk of a cow the greater the *proportion* of sugar present in the milk. In other words, a good milker is also a good sugar producer. A good milker, however, is not so good a producer of butter-fat as a cow giving low yields of milk. An increase in butter-fat is accompanied also by a distinct increase in casein, but with slightly lower proportions of milk, sugar, and other constituents. Another rather remarkable result of the investigation bears on the proportions of albumen and milk sugar. If the cow happens to give a high proportion of milk sugar, the proportion of albumen is much below the average, and *vice versa.* The adulteration of milk, particularly the watering of milk, is discussed in great detail. It is shown that, on account of the great natural variations in milk in *herds of various sizes*, it is quite impossible for a public analyst to state what proportion of water, if any, has been added to the milk. What he can do is to show the high proportion of water naturally present in samples of genuine milk from herds of various sizes. In terms of the regulations, the public analyst is not called upon to state anything further than the results of analysis in deficient samples, and how far a sample of milk is below the prescribed limits in butter-fat and solids not fat. May I recall to the members the fact that the Inter-departmental Committee, in 1922, recommended the abolition of the present *presumptive standards* and the substitution of *legal minimum limits* in their place. If minimum limits were adopted by the legislature, special provision would require to be made for the supply of milk in rural districts and in cases where the dairyman had a small herd of cows.

Waters.—Of the 51 samples of water analysed, 11 were found to be of bad quality, 28 of good quality, and 12 were of excellent quality. One sample contained distinct traces of lead, and in 2 samples copper was found to be present.

Examinations for Poisons.—Of the eighteen examinations of samples of stomach contents and internal organs of animals and of feeding-stuffs for poisons, in three cases lead was found to be present in the stomachs of cattle, and lead was reported as being the cause of death of these animals. There was one case of carbolic acid poisoning. The other samples, including all the feeding-stuffs, were found to be quite free from poisons.

ADVISORY COMMITTEE ON FERTILISERS AND FEEDING-STUFFS.

Members of the Society will remember that a Departmental Committee on Fertilisers and Feeding-Stuffs reported to the Ministry of Agriculture and Fisheries in March 1924. One of the recommendations of the Committee was to institute an Advisory Committee for the purpose of drawing up schedules of fertilisers and feeding-stuffs, defining fertilisers and feeding-stuffs, and reporting on the commodities which should be regarded as worthless and deleterious. The Committee was also requested to recommend the terms in which the valuable constituents of fertilisers and feeding-stuffs should be stated in invoices and other legal documents. As a result of this recommendation on the part of the Departmental Committee, the Ministry of Agriculture and Fisheries appointed a Committee to discharge these functions, and this Committee reported on the 3rd of July 1925. The recommendations of the Committee with respect to basic slag, compound fertilisers, fibre in feed-cakes and fish meal are important in character, and should be noted by members of the Society. The following is an extract from the report of the Committee bearing on basic slag, compound fertilisers, fibre in feeding-cakes and fish meal:—

Basic Slag.—A great deal of discussion has taken place around the question of the desirability of requiring, in the case of basic slag, a statement of the percentage of phosphoric acid soluble in a prescribed solution of citric acid. At one end of the scale there is a very strong feeling that the efficacy of basic slag depends mainly upon a large percentage of the phosphates present being soluble in a weak citric acid solution, and that a statement of the percentage of citric soluble phosphoric acid should, therefore, be demanded. At the other end is the opinion that there is no scientific basis for the belief that citric solubility tests offer any appreciable assistance in determining the value of basic slag.

In this connection we understand that a number of experiments have been and are being carried out at Rothamsted on basic slags of varying solubility, as ascertained by the present official method, the results of which appear to indicate that solubility in citric acid by the official method does not prove altogether trustworthy as a guide to their fertilising value.

In between the two extremes is the view that the present provisions, which permit of a statement of citric solubility but do not make it compulsory, afford all that is needed and should remain substantially unchanged. Certainly, it seems to us that if that position can be maintained, and the practice of giving a statement of citric solubility can be encouraged, those who attach importance to it will be in a position to obtain satisfaction, while nobody will suffer injury.

In face of the evidence, or rather in default of sufficient evidence of a positive character, we are not, as a Committee, able to recommend at the moment that a statement of the citric soluble phosphoric acid should be made compulsory in the case of basic slag, and in consequence we have not included such a requirement in the First Schedule. The adoption of the schedule as drafted will not, of course, prevent sellers from giving a statement of citric solubility, and we have no doubt that those farmers who place some value on this information will have little difficulty in obtaining it.

Nevertheless, we recognise that the position which exists to-day is liable to change materially at any time, and we recommend that the permanent Advisory Committee, when constituted, should bear the matter in mind with a view to the amendment of the schedule, if and when a more satisfactory means of evaluating basic slag than the present "citric solubility" method is evolved.

Compound Fertilisers.—Another matter that has been the subject of much consideration is the nature of the "particulars " to be prescribed in the case of compound fertilisers, particularly with regard to the nitrogen content.

It is possible, in the manufacture of compound fertilisers, to use one or more of a large number of nitrogenous substances of different origin, but we are advised that it is not always possible to check by analytical methods any statement as to the origin of such substances. In addition, the unit values of these substances vary widely, because the nitrogen of some is more readily available to the plant than that of others.

It was suggested that the difficulty might be met by requiring separate statements of the water-soluble and the water-insoluble nitrogen, but, on further examination, this was found to be impracticable because of the possibility of change, in some cases, from insoluble to soluble form, and also because, if the method were adopted, the nitrogen from dried blood, for example, would be classed as " insoluble " (with its implication of inferiority), although this substance is a valuable constituent of compound fertilisers.

In this case, also, therefore, we recommend that the matter should be brought specially to the notice of the permanent Advisory Committee, when constituted, in order that they may give early consideration to the question of classifying nitrogenous substances.

In the case of potash in compound fertilisers, we have come to the conclusion that it will be sufficient if an " acid' soluble " method of analysis is provided for determining the amount of potash present.

The suggestion was made that it would be of advantage to farmers to be informed of the percentage of chlorine, or, preferably, of chlorides contained in compound fertilisers. The whole object of the desire of the farmers to know the percentage of chlorides present is, however, to learn whether the potash contained in the compound fertiliser is derived from sulphate or muriate of potash, and this an analyst could not always state definitely. In the circumstances, therefore, we have, as a Committee, agreed that it would not be desirable to require a statement of the percentage of chlorine.

Fibre in Feeding-cakes.—The recommendation that the percentage of fibre should be among the particulars required to be stated in the case of certain classes of feeding-stuffs, represents a substantial advance from the stock-feeders' point of view.

Some of us, viewing the matter primarily from the agriculturists' standpoint, would have preferred that the percentages of carbohydrates and fibre should be stated in the case of all cakes; or, even, seeing that the figures for moisture and ash must be determined in order to arrive at the percentage of carbohydrates, that a complete analysis should be given. The contention of the manufacturers, on the other hand, is that they should not be required to make a statement (which may involve civil or criminal proceedings) in respect of matters entirely outside their control. It has been pointed out that if, for instance, a manufacturer crushes an undecorticated seed or nut, the fibre in the cake is that which is natural to the particular seed or nut, and its percentage is, for all practical purposes, not alterable by the crusher. In the case of compound feeding-stuffs and of cakes prepared from decorticated or semi-decorticated seeds or nuts, however, the amount of cortex allowed to remain is determinable, within limits, by the manufacturer.

Some feeding-stuff makers already give a full analysis of their goods, and the practice is understood to be on the increase. If farmers generally find this information of value, there will be a tendency to buy goods with which a complete analysis is given, and so indirect pressure will be brought to bear upon other manufacturers to come into line. There is reason to believe, therefore, that the practice in question will continue to extend as a result of the operation of ordinary economic forces. To this, of course, no objection can be taken, but we recognise that it would be a different matter to place a statutory obligation on certain classes of manufacturers to give, under penalties, warranties relating to matters beyond their control.

For present purposes, therefore, we have agreed that the percentage of fibre should be required to be stated in the case of cakes prepared from decorticated or partly decorticated seeds and nuts, but not in the case of undecorticated cakes.

Fish Meal.—In the case of fish meal we have found some difficulty in arriving at an agreement acceptable to all of us, although our differences have been of degree rather than of principle.

While it is not suggested that the oil in fish meal is detrimental to stock in the sense that an overdose is likely to prove fatal, it is the case that bacon and eggs have been found to have a fishy taint after the pigs and poultry have been fed with fish meal. This has, not unnaturally, given rise to a feeling among certain pig and poultry keepers and some of their advisers, that a limitation ought to be placed upon the percentage of oil in fish meal sold for feeding purposes.

On the other hand, it is obvious that, however high the oil content of a parcel of fish meal may be, the user is able to limit the actual quantity of fish-oil fed to his stock *per diem* by reducing the ration of fish meal; and, conversely, if a maximum percentage of oil in fish meal were fixed, it would still be possible for farmers to give larger rations to their stock than they ought, and so for the fishy taint to be transmitted to such produce as bacon and eggs.

There is no doubt that this possibility of tainting will be reduced if farmers are informed of the percentage of oil in each consignment purchased, but we doubt whether it can be altogether removed by legislation. It is only to be expected of the uninformed user that if he finds his pigs or his poultry are doing well on a small quantity of fish meal, he would be inclined to increase the ration; and this would be equally the case whether the oil content were low or high. There seems to be only one method of dealing with the difficulty, and that is by educating the farmer in the proper use of fish meal.

It has been suggested that steps should be taken to render illegal the sale for feeding purposes of fish meal containing more than, say, 6 per cent of oil, but we feel, as a Committee, that that would be too drastic a course, seeing that fish meal of high oil content is now used, without disadvantage, for certain specific purposes.

We are, nevertheless, agreed that some additional form of protection is needed, and we have discussed at great length the desirability of including in the definition of "fish meal" maximum limits both for oil and salt, so as to make it an offence to sell under that name a substance which contains oil in excess of the percentage set out in the definition. We doubt, however, the advisability of defining in so arbitrary a manner a term which is already in general use, and which has, at present, a wider meaning; and, apart from this, the fixing of a maximum percentage of oil in substance sold as "fish meal" would probably mean either that the preparations containing more than the limit of oil would be sold under other names such as "fish protein" (thus destroying the effect of defining "fish meal") or, alternatively, that the substances containing a slight excess of oil would be exported and lost to British agriculture.

These objections do not hold if "white fish meal" is the substance which is defined so as to provide that the oil content must not exceed a stated percentage. It is already generally recognised in the trade that white fish meal should contain not more than from 4 per cent to 6 per cent of oil, and if that trade definition were given statutory sanction, it would still be open to manufacturers of inferior kinds of fish meal to sell them as "fish meal" or "fish residue meal."

From the purchaser's point of view, the one essential seems to be that there should be some kind of fish meal, bearing a familiar name and having a wide market, which he can buy without worrying about the precise oil content, but with the assurance that it is not above a certain specified limit. It is probably better, however, even from this standpoint that the term "white fish meal" should be used in this connection, since it is already regarded as a name denoting an article containing a relatively low percentage of oil.

In the end, therefore, as will be observed from the schedules, we have decided to give a general definition to "fish meal" or "fish residue meal," and a more particular one, including maximum limits for oil and salt, to "white fish meal;" but it will be seen that, in every case, the seller will be required to state the percentage of oil and salt as well as those of protein and phosphoric acid.

The report of the Committee can be obtained from His Majesty's Stationery Office, Cmd. 2740, price 9d. Members interested in the report should also study the schedules which accompany the report, and which appear on page 27 and the following pages. It is regarded as probable that a Bill may be introduced to Parliament at an early date, which, if adopted by Parliament, will take the place of the Fertilisers and Feeding-Stuffs Act of 1906.

THE CEREAL AND OTHER CROPS OF SCOTLAND FOR 1925, AND THE WEATHER OF SCOTLAND IN 1925.

THE CROPS.

The following comparison of the cereal and other crops of 1925 with those of the previous year has been prepared by the Secretary of the Society from answers to queries sent to leading agriculturists in different parts of the country.

The queries issued by the Secretary were in the following terms:—

1. What was the quantity, per imperial acre, and quality of grain and straw, as compared with last year, of the following crops? The quantity of each crop to be stated in bushels. What quantity of seed is generally sown per acre?—(1) Wheat, (2) Barley, (3) Oats.
2. Did the harvest begin at the usual time, or did it begin before or after the usual time? and if so, how long?
3. What was the quantity, per imperial acre, and quality of the hay crop, as compared with last year, both as regards ryegrass and clover respectively? The quantity to be stated in tons and cwts.
4. Was the meadow hay crop more or less productive than last year?
5. What was the yield of the potato crop, per imperial acre, as compared with last year? The quantity to be stated in tons and cwts. Was there any disease? and if so, to what extent, and when did it commence? Were any new varieties planted, and with what result?
6. What was the weight of the turnip crop, per imperial acre, and the quality, as compared with last year? The weight of the turnip crop to be stated in tons and cwts. How did the crop braird? Was more than one sowing required? and why?
7. Were the crops injured by insects? State the kinds of insects. Was the damage greater or less than usual?
8. Were the crops injured by weeds? State the kinds of weeds. Was the damage greater or less than usual?
9. Were the pastures during the season of average growth and quality with last year?
10. How did stock thrive on them?
11. Have cattle and sheep been free from disease?
12. What was the quality of the clip of wool, and was it over or under the average?

From the answers received, the following notes and statistics have been compiled:—

EDINBURGH DISTRICT.

Mid-Lothian. *Wheat*—52 bushels per acre; straw very good, about 35 cwt. per acre, in some places more; sample of grain very much better than last year; 4 bushels per acre sown. *Barley*—52 bushels per acre, but crop varied considerably; quality much better than last year; straw on the whole short, probably about 18 to 20 cwt. per acre; 3 to 3½ bushels per acre sown. *Oats*—56 bushels per acre, but averages more on better class land; crop varied considerably, with some very poor yields where crop was badly put in in the spring of 1925; straw under an average in yield, probably 16 to 22 cwt. per acre; quality good; 5 to 6 bushels per acre sown. *Harvest*—About fourteen days earlier than last year, or about usual time. *Hay*—About 3 tons per acre; quality very good. *Meadow Hay*—Very little grown. *Potatoes*—8 to 10 tons per acre; very little disease; most varieties planted about the same as last year, but there would appear to be an increase in the immune varieties. *Turnips*—18 tons per acre on good land; good quality; some poor crops where late sown owing to wet weather near end of May; crop brairded well as a whole, but in many places was affected by hard or battered surface. *Insects*—Very little evidence of any damage. *Weeds*—Not to any greater extent than usual, but there was a fair amount of "yellow weeds" in corn after lea. *Pastures*—Fair average, but there was an abundance of grass in the "back end." *Live Stock*—Stock seemed to do fairly well; at the same time it might be said ultimate results were, on the whole, disappointing or below average. Cattle and sheep free from disease. *Clip of Wool*—Average clip, but much lower prices prevailed.

West Lothian. *Wheat*—60 bushels per acre; straw good, grain good; seed sown, 4 bushels per acre. *Barley*—44 to 46 bushels per acre; straw short, grain fair; seed sown, 4 to 5 bushels. *Oats*—50 to 52 bushels per acre; straw good, but short; seed sown, 6 to 7 bushels. *Harvest*—Early, but was protracted towards the end by wet weather. *Hay*—40 cwt. per acre, well got, and quality good. *Meadow Hay*—Very little grown. *Potatoes*—Early, about 4 tons per acre; late, 6 to 9 tons per acre; a little disease. *Turnips*—Yield about 20 tons per acre; owing to wet weather land difficult to work; slow to braird. *Insects*—Slight damage, especially to barley. *Weeds*—Wet weather caused a lot of weeds. *Pastures*—Average growth and quality. *Live Stock*—Did well. Cattle and sheep free from disease. *Clip of Wool*—Average clip; quality good.

East Lothian (Upper District). *Wheat*—44 bushels per acre; quality good of both grain and straw; straw less than last year—35 cwt. per acre; the general quantity of seed sown, 4 bushels per acre where drilled. *Barley*—45 bushels per acre, slightly under an average; quality good when not suffering from bad weather; late district best quality; quantity of straw below an average. *Oats*—56 bushels per acre; quality irregular as affected by weather conditions; quantity and weight normal. *Harvest*—Began about the usual date; was a little prolonged on the earliest farms on account of one bad week. *Hay*—2½ tons per acre; quality first-class; both weight and quality better than last year. *Meadow Hay*—None grown in this district. *Potatoes*—7½ tons per acre; under last year; some varieties affected with disease, from 10 to 15 cwt. per acre; comparatively no new varieties. *Turnips*—15 tons per acre; much below an average, and is accounted for by the wet weather at sowing, and heavy land suffered badly; some yielded only half a crop, which greatly affected the average; no resowing. *Insects*—No damage. *Weeds*—Nothing unusual, although still too much wild mustard in some farms. *Pastures*—An average growth and the quality good; better than last year. *Live Stock*—All stock did well. Cattle and sheep free from disease. *Clip of Wool*—About an average clip.

East Lothian (Lower District). *Wheat*—36 to 44 bushels; crop a fair one; good quality; 3 to 4 bushels sown. *Barley*—A variable crop; some fields suffering from drought; 40 to 56 bushels; seed sown, about 3½ bushels. *Oats*—A light crop; many fields burnt up with drought; 40 to 64 bushels; seed sown, 4 bushels Potato oats, 5½ bushels thick-skinned varieties. *Harvest*—Commenced 15th August, about usual time; fine weather generally, though showery; crop secured mainly in good condition. *Hay*—A good crop; fine quality; 2½ to 3 tons. *Meadow Hay*—A good crop; quite average. *Potatoes*—Late varieties a disappointing crop; the wet planting season affecting yields; disease struck crop in mid-August; 1 to 2 tons per acre of blight; crops about 4 to 7 tons generally; a new main crop late potato is required; Arran Consul did well. *Turnips*—16 to 28 tons; crops variable; many fields late in brairding. *Insects*—Not much damage caused. *Weeds*—Charlock caused considerable damage in some fields. *Pastures*—Poor season. *Live Stock*—Throve fairly well. Cattle and sheep free from disease. *Clip of Wool*—Good clip.

BORDER DISTRICT.

Berwickshire (Lammermoor). *Wheat*—Practically none grown. *Barley*—Average crop of good quality grain, not nearly so much straw as last year, not much laid, and easily harvested; yield of grain about 32 bushels; 3 to 4 bushels sown. *Oats*—Rather under average crop owing to want of rain; a considerable acreage of oats, however, grown after wild White Clover; a heavy crop, and badly lodged shortly before harvest; on the whole, straw light; grain much better quality than last year; yield 36 to 40 bushels; 4 to 6 bushels sown. *Harvest*—About the usual time, some ten days to a fortnight earlier than last year. *Hay*—A good average crop; got well started before dry weather set in; yield 1 ton 15 cwt. to 2 tons per acre. *Meadow Hay*—Fair average crop, not so heavy as last year, but easy to harvest, and secured in much better condition than for many years past; yield around 30 cwt. per acre. *Potatoes*—Average crop for the district, about 6 tons per acre; disease not troublesome; considerable area of the crop not lifted before the severe frost in November, and completely spoiled; crop very late in ripening; no new variety of note grown in district, though Kerr's Pink is coming much more into favour. *Turnips*—A very variable crop; early sown Swedes and turnips were a full average crop, later sown turnips were almost a complete failure; yield of well-grown turnips about 20 tons; brairding was very uneven, and in many cases second sowing was tried, but with poor results; growth stopped early in year due to severe and long-continued frost. *Insects*—No great damage caused by insects. *Weeds*—Much less troublesome than last year, owing to dry weather and ease with which cleaning operations could be overtaken; Charlock still prevalent in oat crop. *Pastures*—Young pastures rather poor due to exceedingly dry summer; older pastures, and especially those with Cocksfoot and wild White Clover in them, yielded a full crop of better quality feed than last year. *Live Stock*—Stock throve very well all season. Cattle free from disease; sheep also above the average for health; Scrapie seems to have been less severe. *Clip of Wool*—About an average clip of good quality.

ROXBURGHSHIRE. *Wheat*—Very small acreage grown. *Barley*—A fine crop on good corn land where sown early, but a poor crop on second-class wet land; yield very variable, from 24 to 48 bushels per acre, with 10 to 18 cwt. straw; 2½ to 3 bushels per acre sown. *Oats*—A good crop; not so much straw as last year, and easier to harvest; straw about 16 cwt.; seed 4 to 6 bushels, according to kind of oats. *Harvest*—Began in the end of August, and was all finished in September; good weather, and grain mostly well secured. *Hay*—A fine crop of average quantity, and got in fine order; clover about 35 cwt. *Meadow Hay*—Not so heavy, but much better quality; 30 cwt. per acre. *Potatoes*—A good crop, about 8 tons per acre; little disease; long in ripening, and frost set in after heavy rain before lifting was finished; some not lifted. *Turnips*—Turnip crop very variable; Swedes are the best crop, 20 to 25 tons; many heavy crops of them; yellows are, as a rule, very poor; owing to wet weather little turnip sowing was done before 28th of May, and early in June a drought set in; many of the yellows were too late in brairding, and with the early frost gave no results. *Insects*—No damage from insects; dry rot and Finger-and-Toe pretty prevalent; land seems to need lime. *Weeds*—Not much damage from weeds. *Pastures*—A good grass year, not so rank as the previous year. *Live Stock*—Sheep did fairly well in the beginning of the season, but too many small lambs; poor season for cattle—a great many did not fatten. Sheep did better this year, but Scrapie is still prevalent, and a great deal of lamb sickness. *Clip of Wool*—Quality good, and weight up to an average.

SELKIRKSHIRE. *Wheat*—None grown. *Barley*—40 bushels; good crop. *Oats*—Threshed well, about an average of 44 bushels per acre. *Harvest*—An average harvest. *Hay*—2 tons per acre, all well got. *Meadow Hay*—Generally crops were not so heavy, 30 cwt. per acre, and secured in good order; hill hay, on the other hand, was a great crop, and was secured in fair order. *Potatoes*—8 to 10 tons per acre; no disease; a few acres were lost with frost at the end of October and beginning of November. *Turnips*—Gave cause for much anxiety early in the season, and in many cases were much too late in coming to the hoe, and in some cases were a failure, but the early fields finished an average crop; 14 to 24 tons per acre. *Insects*—None. *Weeds*—Not much damage.

Pastures—Average growth and quality. *Live Stock*—Stock throve well. Cattle and sheep absolutely free from disease. *Clip of Wool*—An average clip of good quality.

PEEBLESHIRE. *Wheat*—Very little grown, if any. *Barley*—40 to 48 bushels; 16 to 20 cwt. straw; seed, 4 bushels per acre. *Oats*—48 to 60 bushels per acre, and 18 to 22 cwt. straw; seed, 5 bushels per acre. *Harvest*—A little earlier than last year. *Hay*—30 to 40 cwt. per acre, and got in splendid order. *Meadow Hay*—30 to 40 cwt. per acre, and secured in good order. *Potatoes*—6 to 8 tons per acre, and quality very good; in many cases only half a crop. *Turnips*—On stiff land were a middling crop, and brairded very unevenly; only half a crop; free land did well, and yielded from 15 to 25 tons per acre. *Insects*—Not much damage. *Weeds*—Not much damage. *Pastures*—Did well. *Live Stock*—Stock throve well. Cattle and sheep free from disease. *Clip of Wool*—Good, but a little less than last year.

DUMFRIES DISTRICT.

DUMFRIESSHIRE (Annandale). *Wheat*—None grown. *Barley*—The acreage sown is very small; owing to the very dry summer the bulk of straw was below the average; yield—grain 28 bushels per acre, straw 20 cwt. per acre. *Oats*—Below the average all over, but on heavy soil and where early sown the crop was very good; yield—grain 35 bushels per acre, straw 29 cwt. per acre; the quality of both grain and straw was far above that of last year; sowing started about the 18th March, and was general about the 26th; after sowing very wet weather followed until the end of May, and thereafter the very dry hot summer brought the grain crop rapidly to maturity, harvest beginning about the 8th August, being a month earlier than last year. *Harvest*—The 1925 harvest, in many cases, was finished before the starting date of that of 1924, and very little extra labour was required; a good deal of heating in the stackyard took place owing to the very warm mild weather. *Hay*—Ryegrass was a poor crop taken all over, being far below that of last year, but the quality was much better; yield, from 20 to 25 cwt. per acre; the absence of clover in the hay was very conspicuous. *Meadow Hay*—Quantity below that of last year, but quality far better. *Potatoes*—Were a very good crop all over, but second growth started in some cases, and very late ripening was the result; many farmers got caught by the early severe frosts, and consequently the potatoes had to be left in the ground; disease was very slight; no new varieties were tried; yield about 8 tons per acre. *Turnips*—All early sown did very well, and were an extra good crop; they brairded well, and came quickly to the hoe; after the very heavy rains in May it was nearly impossible to get the soil in a reasonable state of tilth to receive the seed, and consequently there was a good deal of second sowing; in many cases sowing had to be abandoned altogether owing to the lateness of the season. *Insects*—Grub, as usual, did a lot of damage to the oat drop, and turnip-fly was very evident in some fields. *Weeds*—Did not do much harm except in the case of charlock, and many fields of corn got spoiled by this weed. *Pastures*—Came away well in the early part of summer, but as the drought during June and part of July continued light soil suffered badly, and fields everywhere were bare and brown; the drought broke on the 28th July, and in a remarkably short time the fields were luxuriant with grass and clover, which continued right up until October. *Live Stock*—The quality of the pastures was above that of last year, and live stock of all kinds throve well. Disease among cattle was slight, but Liver Fluke in sheep claimed a very heavy toll. *Clip of Wool*—Quality about the same as last year, but quantity slightly above.

DUMFRIES (Nithsdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—Ripened early, and yield of grain good, but straw deficient in bulk, and about a fourth under average. *Hay*—A fair average crop, and was secured in the best of order at a minimum cost. *Potatoes*—Rather over an average crop for both quality and tonnage. *Turnips*—Early turnips were a good crop; later sown did not bulk so well; about an average crop all over; early frost in November caused serious loss where not secured, as on many farms turnips gave way when the thaw came in January. *Live Stock*—Throve well. Cattle and sheep free from disease.

DUMFRIES (Eskdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—Were a light crop, and straw very short owing to the severe drought during June and July, but oats threshed out much better than was expected, yielding about 38 bushels per acre; the straw was very good fodder, but very scarce; seed sown, about 7 bushels per acre of the thick-skinned oats, and about 5 bushels per acre of Potato oats. *Harvest*—Started about the usual time; it was rather catchy weather for cutting, as there was hardly a dry day, but afterwards it cleared and was a good harvest. *Hay*—Ryegrass was a fair crop, short in some places, but was all secured in excellent condition. *Meadow Hay*—A much lighter crop than last year, but was mostly got in excellent condition, and very little bad hay was made this season. *Potatoes*—About 7 tons per acre, rather lighter than last year; very little disease; not ready for lifting until late autumn, and then the hard frost came and a large acreage were never lifted, being all frozen in the ground. *Turnips*—Crop was very variable; one farm had a fairly good crop, and probably the neighbouring farm a bad one; owing to the drought a lot of turnips came very badly to the hoe, and a large acreage was resown. *Insects*—No damage by insects. *Weeds*—No damage. *Pastures*—Quality was good, but the growth less than last year. *Live Stock*—Throve well. Cattle and sheep have been very free from disease, but a few deaths from Braxy amongst hoggs which were not inoculated or dosed. *Clip of Wool*—Quality of the clip better than last year.

KIRKCUDBRIGHTSHIRE. *Wheat*—None grown. *Barley*—None grown. *Oats*—Suffered severely from the drought in June; the straw in most cases was very short; average yield under 20 cwt. per acre; yield of grain about 45 bushels per acre; harvesting conditions variable; early cut crops were a long time in stook, with some resultant damage. *Harvest*—About ten days earlier than usual. *Hay*—Rotation hay quite equal to last year, 35 cwt. per acre, and made in perfect condition. *Meadow Hay*—Good crop, and well got. *Potatoes*—Early potato crop was very light, about half last year's yield, weighing 5 tons per acre; no disease; late varieties a heavy crop; average yield, 10 to 12 tons per acre. *Turnips*—A good sound crop of about 20 tons per acre; a little trouble at brairding; some resowing, but, on the whole, satisfactory results were obtained. *Insects*—No injury. *Weeds*—None. *Pastures*—Quite equal to last year, and of better quality. *Live Stock*—Throve well. Cattle and sheep free from disease.

GLASGOW DISTRICT.

AYRSHIRE. *Wheat*—54 bushels, 59 lb. per bushel; straw, 30 cwt. per acre; grain and straw about average; seed, 3 to 3½ bushels per acre. *Barley*—34 bushels, 53 lb. per bushel; straw, 20 cwt. per acre; generally a small crop with short straw; seed, 3 to 4 bushels per acre. *Oats*—43 bushels, 39 lb. per bushel; straw, 16 cwt. per acre; the smallest crop for some years; straw very short; seed, 5½ to 7 bushels per acre. *Harvest*—Began about the third week in August, being two to three weeks earlier than usual. *Hay*—1 ton 15 cwt. per acre; a moderate crop, which was saved in good condition. *Meadow Hay*—About the same as last season, but was secured in much better condition. *Potatoes*—About 8 tons per acre; no disease; any new varieties planted were only by way of experiment, and did not compare favourably with Epicure, which has held the field for many years. *Turnips*—19 tons per acre; turned out a good crop on good land where sown early; later sown lots did not braird satisfactorily, and crops were very variable in some districts. *Insects*—Not greater than usual. *Weeds*—The damage done by weeds was of the usual nature. *Pastures*—Continuous rains up to the end of May, followed immediately by a long-continued drought, did not tend to make the pasture as plentiful or nutritious as usual. *Live Stock*—Only moderately well. Cattle and sheep free from disease. *Clip of Wool*—About an average clip of wool both on low ground and hill.

BUTE. *Wheat*—None grown. *Barley*—None grown. *Oats*—A light crop generally, on red land a short crop, but a better crop after lea; threshing a great deal better than usual; 36 to 48 bushels per acre; 6 bushels seed sown. *Harvest*—Earlier this year; started cutting 24th August, and finished 25th September; finished nearly a month earlier than last year. *Hay*—Much the same as last year, perhaps, if anything, a lighter crop; quality good, but still a scarcity of clover; 1½ tons per acre. *Meadow Hay*—Very little grown; crop and quality better than last year. *Potatoes*—Began digging early variety on 25th June; yield less than last year; average about 3 tons to the acre; crop spoiled with too much dry weather in June; second earlies and late potatoes were a better crop; 7 tons per acre; not much disease; no new varieties grown. *Turnips*—Have turned out very good; very late in getting the sowing finished; completed sowing Swedes on 6th June; from 12 to 22 tons to the acre; crop brairded poor at the beginning; there was a good deal of resowing, mostly with yellows; the cause of the resowing was the sudden change from wet to very dry weather with great heat, making the ground too hard for the tender turnip plant to get through. *Insects*—Very little damage from insects—less than usual. *Weeds*—No damage; owing to fine weather weeds were easily killed. *Pastures*—Average growth; quality good. *Live Stock*—Did well; better than for a number of years. Cattle and sheep very free from disease. *Clip of Wool*—Average clip of wool; quality good.

ARRAN. *Wheat*—None grown. *Barley*—None grown. *Oats*—The poorest crop for years, a fair-sized stack holding the produce of five acres; on many of the small farms stackyards will be empty before the end of February, and fodder scarce all over the island; it is difficult to give an average yield of grain, but on some of the better farms a yield of 25 bushels was obtained, weighing up to 40 lb. per bushel. *Harvest*—Began about 2nd September, and finished in about four weeks; the season was good, and crops were well secured. *Hay*—Crop fairly good all over, and on some farms exceptionally good, being up to 3 tons per acre; a fair quantity of grass; "seed" hay was secured in good condition, and sold at a good price; the season was very good for securing the crop. *Meadow Hay*—Rather better than last year. *Potatoes*—Average 7 tons per acre; an extra good season for lates, but the earlies were just about half a crop owing to the very dry weather in June, and they matured prematurely; most of the tubers were only "chats"; the price so far would not pay for seed and manures; little disease; Arran Consul now on the market, and appears to be the potato of the future. *Turnips*—Poor miserable crop on some farms, and extra good on others; average crop about 12 tons. *Insects*—Little damage by insects, but wood-pigeons cleaned up many fields, which had to be resown, and these failed owing to dry weather in June; the seed never germinated till late on in the season. *Weeds*—Fairly free from weeds owing to dry season. *Pastures*—Average growth, and fully a better year towards the later part of season. *Live Stock*—On the whole did well. No case of disease of any kind among cattle and sheep on the island. *Clip of Wool*—Good quality; fully a better average; prices were well maintained.

LANARKSHIRE (Upper Ward). *Wheat*—None grown. *Barley*—Only small quantities grown. *Oats*—45 to 60 bushels; more grain but less straw than last year; excellent quality and well got; 4 to 6 bushels sown. *Harvest*—Started about 14th August with some early oats, but not general till third week in August; two weeks or so earlier than usual. *Hay*—30 to 45 cwt.; owing to long spell of dry weather did not bulk so well as last year; good quality and well got. *Meadow Hay*—Much the same as last year, but secured with less trouble; excellent quality. *Potatoes*—8 to 10 tons, rather less than last year; very little disease; owing to some second growth and bad weather during lifting season, some potatoes are not keeping too well in the pits. *Turnips*—28 to 35 tons; good quality owing to the dry weather; the later sown turnips came slowly to the hoe, and were a bit blanky in many cases, and had to be resown; early sown turnips brairded well. *Insects*—Not much damage by insects. *Weeds*—Owing to the dry weather weeds were easily kept in check, doing little damage to the crop. *Pastures*—Suffered a little from drought, but recovered after the rain, and grazed well into autumn. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—Average.

LANARKSHIRE (Middle Ward). *Wheat*—Yield, 35 to 45 bushels; straw, 30 to 40 cwt. per acre; seed sown, 4 bushels per acre; quality of grain and straw very superior. *Barley*—None grown. *Oats*—Yield, 25 to 40 bushels; straw, 20 to 30 cwt. per acre; seed sown, 6 to 7 bushels per acre. *Harvest*—Good weather prevailed during harvest, and all crops were got in in fine condition. *Hay*—Smaller crop than usual; 20 to 35 cwt. per acre. *Meadow Hay*—30 to 50 cwt. per acre. *Potatoes*—Turned out a very good crop, with very little disease; prices realised were very low; weight of crop, 7 to 12 tons per acre. *Turnips*—Very variable crop owing to wet spring; 7 to 25 tons per acre; no disease. *Insects*—No damage, but there was a good deal of wireworm in oats in spring. *Weeds*—A good season for checking the growth of weeds by cleaning the drilled green crop. *Pastures*—Rather short during summer months. *Live Stock*—Cattle generally healthy. No Foot-and-Mouth disease. *Clip of Wool*—Very few sheep in this ward.

LANARKSHIRE (Lower Ward). *Wheat*—44 to 48 bushels; quality good, and equal to last year; straw deficient; seed sown, 3½ bushels per acre. *Barley*—None grown. *Oats*—24 to 28 cwt. per acre; straw deficient; 16 cwt. per acre; quality good; seed sown, 5 to 6 bushels per acre. *Harvest*—Began last week in August, a fortnight earlier than last year. *Hay*—Crop lighter than last year; 30 to 35 cwt. for ryegrass and clover; Timothy same as last year; 40 cwt. per acre. *Meadow Hay*—None grown. *Potatoes*—Yield similar to last year, 9 to 10 tons per acre; no disease; no new varieties planted. *Turnips*—25 to 38 tons per acre; quality equal to last season; the crop brairded well, and only one sowing required, except on stiff land. *Insects*—No injury. *Weeds*—None. *Pastures*—Not so good as last year; suffered from drought in July and August. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—Average; very few sheep kept.

RENFREWSHIRE. *Wheat*—36 to 40 bushels; straw, 28 cwt. per acre; seed, 5 bushels per acre; quality of both grain and straw quite up to usual standard; not so much wheat grown this year. *Barley*—Very little now grown in this county, with the result that the fiars price for barley is arrived at from that grown in the neighbouring county of Lanarkshire. *Oats*—Average quantity about 44 bushels; straw about 23 cwt. per acre; seed, 5 to 5½ bushels per acre; quality of both grain and straw quite up to usual standard. *Harvest*—On the whole, harvest commenced fully one week earlier than usual; was a great improvement from that of last season, although farmers in late districts had some trouble before fields were cleared. *Hay*—Quite good crop; fully up to usual average of about 45 cwt.; quality above average, owing to suitable weather for securing crop. *Meadow Hay*—Quantity much as usual, with quality better than last season. *Potatoes*—Fully better return than last year, both as to quantity and quality; about 7 tons per acre; no disease worth mentioning; no new varieties sown. *Turnips*—Very much the same as last year; average crop about 18 tons per acre; quality quite up to usual; in some districts brairded very slowly; few cases of resowing. *Insects*—No injury to speak of; turnips suffered slightly in some districts. *Weeds*—Where attention was given and aided by favourable weather weeds were kept in hand, and crops did not suffer. *Pastures*—Quite good, and quality very superior to that of last season. *Live Stock*—Throve well, with quite satisfactory results. Cattle and sheep free from disease. *Clip of Wool*—Quite up to usual in weight, with rather better quality than last year.

ARGYLLSHIRE (Lochgilphead). *Wheat*—None grown. *Barley*—None grown. *Oats*—Lea about the same as last year, sown down land, short and thin on the ground owing to excessive wet in May; lea straw about 1 ton, grain 5½ bolls; red land straw 15 cwt., grain 5 bolls. *Harvest*—A little earlier than last year; some districts began on 19th August, but in general about 1st September. *Hay*—Rye-grass hay much the same as last year when well done and saved in time, but otherwise not so heavy; about 25 cwt. average well secured. *Meadow Hay*—Fully larger bulk than last year, about 2 tons, and was well secured. *Potatoes*—Crop better both in quantity and quality than last year; 6 to 7 tons per acre; not much disease. *Turnips*—Mostly better than last year; about 20 tons, but in a few cases up to 30 tons; crop brairded well, but some were rather late in being sown owing to wet weather at end of May, and those did not bulk so well; only one sowing required. *Insects*—Very little grub in the lea crop. *Weeds*—Crops not injured by weeds to any extent, except red land corn injured by redshank. *Pastures*—Were of much better quality than last year, and quite of average growth. *Live Stock*—Throve well. Fluke very prevalent in sheep owing to wet spring, but cattle very healthy. *Clip of Wool*—Clip of wool was of good quality, and rather over the average.

ARGYLLSHIRE (Islands of Islay, Jura, and Colonsay). *Wheat*—None sown. *Barley*—None grown. *Oats*—About 36 bushels per acre, and average weight of grain 38 lb. per bushel; harvest much earlier than usual, though late lying lands were later on account of continued spell of wet weather in third and fourth weeks of September. *Harvest*—Earlier than usual, but took longer, as only the early ripened lots got the benefit of the good weather at the beginning of September. *Hay*—Crop was secured in good condition; rather more clover than last year, but just an average crop. *Meadow Hay*—Plenty of meadow hay could be cut in the open moors apart from the usual meadows; no scarcity of grass anywhere. *Potatoes*—While not a bumper crop were of excellent quality, and would yield about 5 tons per acre; Kerr's Pink, Arran Chief, and Factor are still favourites. *Turnips*—Much better than last year; actually turnips were growing up to beginning of December; crop brairded well; one sowing only required; will run about 17 to 18 tons per acre. *Weeds*—In some instances where seed did not germinate evenly or rapidly the young plants got choked with chickenweed, which required weeding by hand. *Pastures*—Above average in growth and quality. *Live Stock*—Throve excellently, both store cattle and dairy cows. Liver Rot or Fluke prevalent; over 40,000 capsules of liquid extract of male fern have been administered to 10,000 sheep during back-end of year; each capsule contains 1 drachm; the dose is 2 capsules, and to be repeated after 24 hours; the doses are given in the morning, and the sheep are prepared by removal from pasture in the afternoon of the previous day. *Clip of Wool*—Average clip. *Sugar Beet*—Was grown on a number of farms in Islay, and was a success generally, although it was a failure on a few; the roots have now been lifted and sent off to the Orchard Sugar Refinery Co., Greenock; only small plots were tried as a rule, but 4¼ cwt. is reported in two or three cases of ¼ acre=17 cwt. per acre.

STIRLING DISTRICT.

DUMBARTONSHIRE (Upper). *Wheat*—None grown. *Barley*—None grown. *Oats*—About 25 bushels per acre; straw in many cases deficient, as land got soured with cold rain in May. *Harvest*—Began about eight days earlier than usual. *Hay*—Was not a heavy crop; about 1½ tons per acre; quality was good, and the crop was saved in the best of order. *Meadow Hay*—Was a good crop, and was got in excellent order. *Potatoes*—Were a good crop, about 8 tons per acre; hardly any disease; no new varieties planted. *Turnips*—Were a good crop, about 20 tons per acre; they brairded well, though they were late in being sown, owing to wet weather in May; no resowing. *Insects*—There was a good deal of damage to lea oats by grub, but Paris Green and bran were applied with good effect. *Weeds*—None; owing to the good summer, weeds were easily kept down. *Pastures*—Were better than last year. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—Was a little under the average both in weight and quality.

DUMBARTONSHIRE (Lower). *Wheat*—About 36 bushels per acre; quality of grain better than last year; seed sown, 3½ to 4 bushels per acre. *Barley*—Little or none grown. *Oats*—About 36 bushels; quality good; straw very light, owing to wet spring and dry summer; seed sown from 5 to 6½ bushels. *Harvest*—Began on first week of September, a little earlier than last year. *Hay*—A rather lighter crop than last year, about 30 cwt.; the crop was well got. *Meadow Hay*—About the same as last year, mostly well secured. *Potatoes*—A better crop than last year; from 5 to 9 tons according to variety; quality good. *Turnips*—About 18 tons, a better crop than last year; early sown turnips brairded well, but late sown ones were very uneven. *Insects*—None. *Weeds*—Damage less than usual owing to dry weather in summer. *Pastures*—Average growth and quality. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—An average crop.

STIRLINGSHIRE (Western District). *Wheat*—None grown. *Barley* None grown. *Oats*—32 to 38 bushels; straw about 15 cwt.; seed, 5 to 6 bushels; there was a great deal of worming due to cold wet weather in the early season, then a long spell of dry weather set in, with the result that straw was very short. *Harvest*—Same time as last year, about 10th September. *Hay*—About 1 ton 7 cwt. per acre, being about 13 cwt. less than last year; clover much the same as last year; secured in fine condition. *Meadow Hay*—Much the same as last year, but got in good order. *Potatoes*—A much better crop than last year; average about 7 tons per acre; little or no disease, but a second growth set in, and the crop did not keep too well; no new varieties planted. *Turnips*—14 to 20 tons per acre;

brairded very slowly; some second sowing owing to long continuance of dry weather; the crop was very irregular, and on some farms a complete failure. *Insects*—No damage by insects. *Weeds*—Crops suffered from weeds, especially from redshank, but not nearly to the same extent as last year. *Pastures*—Of average growth and quality; suffered a little from drought. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—Quantity and quality about an average.

STIRLINGSHIRE (Eastern District). *Wheat*—About 60 bushels per acre; good quality; straw about 25 cwt. *Barley*—About 38 bushels per acre; good quality; straw 20 cwt. *Oats*—About 40 bushels per acre; good quality; straw 15 cwt. *Harvest*—About usual time; good weather, and all crops well secured. *Hay*—Good crop, and secured in fine order. *Meadow Hay*—Good crop, and well secured. *Potatoes*—Good crop, with very little disease. *Turnips*—Good crop, except on stiff land; about 16 tons per acre. *Insects*—Nothing unusual. *Weeds*—Less weeds, owing to the dry season. *Pastures*—Average growth and quality good. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—Good.

CLACKMANNANSHIRE. *Wheat*—A good crop of grain and straw; the grain threshed well, and the quality was good; 34 bushels per acre; 3 to 4 bushels of seed sown. *Barley*—An average crop, fair bulk of straw; kept green a long time, and ripened very irregularly; yield about 30 bushels per acre; 3 to 4 bushels of seed sown. *Oats*—The straw was very short, and did not bulk well, and in many cases the crop was thin on the ground; during harvest the weather was good, and the crop was generally secured in good condition; average yield, 32 to 34 bushels per acre; average weight per bushel, 41 lb. *Harvest*—Begun at the usual time. *Hay*—Crop was under the average in bulk, but the quality was good, and secured in excellent condition; would weigh from 30 to 32 cwt. per acre; Timothy hay was a full average crop, and was also secured in excellent condition; 38 to 45 cwt. per acre. *Meadow Hay*—A good crop, and got in excellent condition. *Potatoes*—From 7 to 8 tons per acre; there was no disease; the varieties planted were mostly Kerr's Pink and Golden Wonder. *Turnips*—A very irregular crop; on some farms almost a failure; where early sown on good land the crop was quite good; yield from 10 to 15 tons per acre; very little Finger-and-Toe disease; the drills were easily kept clean; very little second sowing. *Insects*—Some damage done by grub to lea oats. *Weeds*—Very little damage by weeds; was less than usual. *Pastures*—Were abundant in the early part of the season, but after the dry spell in June they failed to some extent, and later on some fields were rather bare. *Live Stock*—On the whole, did fairly well. Cattle and sheep were free from disease. *Clip of Wool*—Was a fair average.

PERTHSHIRE (Western District). *Wheat*—An average of 36 bushels per acre; average crop of straw of good quality and quantity; grain a good sample. *Barley*—The area of barley sown is annually growing less, but the season was favourable to a good sample, and the yield was a full average; there was a fair bulk of straw; yield of grain about 30 bushels. *Oats*—A good crop of both grain and straw, and of good quality; the yield would be about 34 bushels; in most districts the cereal crops were secured in good condition. *Harvest*—Harvesting commenced quite ten days earlier than for some years, and operations were not hindered by broken weather. *Hay*—A full average crop, especially of Timothy, which yielded as much as 3½ tons per acre on carse land; the crop generally was secured in good condition. *Meadow Hay*—Very little meadow hay is grown in the district; the bulk was under an average, due to the dry season. *Potatoes*—A good crop of 8 to 10 tons per acre; free from disease; some of the newer varieties were planted, but in most cases the farmers depend largely upon the older and tried varieties. *Turnips*—An excellent crop; average bulk about 15 to 18 tons; crop brairded well, and no second sowing took place. *Insects*—None. *Weeds*—No damage, the season being very favourable for working crops. *Pastures*—In some cases were too dry, and the growth was retarded. *Live Stock*—Throve well on the pastures. Cattle and sheep free from disease. *Clip of Wool*—A full average and of good quality.

PERTH DISTRICT.

FIFESHIRE (Middle and Eastern District). *Wheat*—The crop of the season; 40 to 48 bushels per acre; quality and natural weight good; straw over an average; seeding, 3 to 4 bushels per acre. *Barley*—Crop very variable; generally seeded in bad condition; light and also heavy clay lands badly affected by drought during summer; yield of grain about an average; 40 to 44 bushels per acre; straw very light. *Oats*—Seeded in bad condition, and many fields affected with grub, &c.; on good land grain and straw a good crop of fine quality; yield under an average, generally from 4 to 8 quarters per acre. *Harvest*—Commenced about third week of August, and all secured under favourable conditions within one month. *Hay*—Less bulky than previous year; from 35 to 40 cwt. per acre; quality excellent, and secured in fine condition. *Meadow Hay*—None grown. *Potatoes*—Yield fully better than last year, 6 to 7 tons dressed; some disease in certain varieties, and complaints of not keeping in pits; no new varieties grown. *Turnips*—Very variable; Swedes better than last year; from 15 to 20 tons per acre; on heavy land crop brairded very badly, and on some fields a partial failure; yellows, where early germinated, a bumper crop on many fields. *Insects*—On oat and barley fields many crops badly damaged by grub or wireworm. *Weeds*—Skellock and runches; worse than usual on fields affected with this pest. *Pastures*—Abundant, and of good quality. *Live Stock*—Throve well. Cattle and sheep generally free from disease; one very serious outbreak of Anthrax, eight animals affected on one farm; also a few cases of grass sickness in horses. *Clip of Wool*—About an average clip.

FIFESHIRE (Western District). *Wheat*—Compared with last year the grain crop in general is superior as regards quality and quantity; yield of wheat about 40 bushels to the acre; the straw yield due to the dry summer was lighter than general; usual seeding, 4 bushels per acre. *Barley*—A good crop, but on some light lands it was rather stunted; the quality was, however, good; crops yielded 40 to 48 quarters, and in cases even more; straw under an average; usual seeding, 4 bushels per acre. *Oats*—The quality of oats has been exceptionally good, and weighing well to the bushel; the crops run in the poorer districts from 40 bushels to 64 bushels on the good lands, and in some cases more; straw of good quality has been scarce, and the stackyards of the district have been easily emptied; usual seeding, 5 to 6 bushels per acre. *Harvest*—Was about ten days earlier than the average of years; a commencement was made about 17th August, and was general towards the end of the month; the work was interrupted at times by wet days, and some cases of stacking before the grain was in order were noticed; the crop was, however, secured in good order. *Hay*—A crop of 30 cwt. per acre and over was harvested, and the quality of the very best. *Meadow Hay*—Was under an average as regards weight; the quality was, however, good. *Potatoes*—Crop was light, the season being too dry for this crop; the tubers were, however, reported free from disease; earlies and second earlies yielded 5 or 6 tons per acre, the late main crop slightly more; prices were, however, very disappointing for the grower, and will not pay working expenses. *Turnips*—Were sown in a good condition except on hard land, where it was impossible to get a good mould, the land being too dry, and in consequence the seed took long to germinate; the singling was mostly done in patches as the young plants came forward; the crop has turned out much better than was at first expected, many of the bulbs being of large size; crops of about 18 tons per acre; very little second sowing was reported. *Insects*—The grub caused much damage in some parts amongst lea oats, where the land had been for some time in pasture, otherwise there were no other insect pests. *Weeds*—The dry summer prevented the growth of weeds, and the green crop was easily cleaned; the year has been beneficial for cleaning dirty land. *Pastures*—Despite the long drought the pastures held out well, and generally stock throve well; with the fall in prices grazing cattle left little or no profit to the grazier; feeding cattle also leave a debt behind them. *Live Stock*—Throve well. Cattle and sheep have been free from disease. *Clip of Wool*—The quality has been good, and sheep have given a return slightly over the average as regards weight. *Sugar Beet*—It may be reported that several trial crops of sugar beet have been put down, with varying results; crops of 9½ to 10 tons are reported, and it is expected that a greater acreage will be grown in this rotation.

PERTHSHIRE (Eastern District). *Wheat*—A very good crop; both grain and straw fine quality; yield about 44 bushels per acre; seed, 3 to 4 bushels per acre. *Barley*—Rather under average; yield about 34 bushels per acre; seed, 3 to 4 bushels per acre. *Oats*—Very satisfactory crop; both grain and straw good quality; yield about 48 bushels per acre; seed, 4 to 6 bushels per acre. *Harvest*—Began about a week earlier than usual. *Hay*—A good bulky crop, and secured in excellent condition; yield about 35 cwt. per acre. *Meadow Hay*—Very little grown. *Potatoes*—Good average crop; yield about 7 tons. *Turnips*—An excellent crop generally; some fields disappointing on stiff land; yield about 20 tons per acre. *Insects*—Many fields of lea oats suffered badly from grub (Daddy-Longlegs). *Weeds*—Not more damage than usual. *Pastures*—Good average growth, and better quality than last year. *Live Stock*—Throve well. Cattle and sheep free from disease, but many cases of horse sickness in the district. *Clip of Wool*—Clip above average; good quality.

PERTHSHIRE (Central District). *Wheat*—A fairly large break was sown, and the return was an average one; the wheat was harvested, on the whole, in fair condition; about 39 bushels per acre. *Barley*—The crop was fair, but the acreage sown was under the usual; straw was plentiful; yield would be about 36 bushels per acre, weighing from 50 to 54 lb. to the bushel. *Oats*—Extensively grown; about 36 bushels per acre. *Harvest*—The quality of the grain cut in August and September was good; the harvest weather was very favourable, and the crop was secured in good condition; charlock is still, unfortunately, on the increase. *Hay*—Was of good quality and was secured in excellent order, and the yield was above the average. *Meadow Hay*—The yield was very satisfactory. *Potatoes*—Progressed very satisfactorily throughout the season, and they were a very large crop; the average would be from 7 to 10 tons per acre; the crop was free from disease. *Turnips*—The yield, on the whole, was about the average; Swedes did very well; weight from 11 to 20 tons per acre. *Insects*—Damage was done on some farms by wireworm. *Weeds*—Were plentiful and difficult to keep down; couchweed is still, unfortunately, on the increase. *Pastures*—Were good. *Live Stock*—Generally did well throughout the year. Cattle and sheep were free from disease. *Clip of Wool*—Was of good quality and a very full average.

PERTHSHIRE (Highland District). *Wheat*—None sown. *Barley*—Very little sown last year, and what was sown yielded poor straw and a small return of grain; 20 bushels per acre. *Oats*—Crop above an average in yield of grain, and quality exceptionally good and in weight heavy; straw rather short in bulk, but very well secured; 40 bushels per acre. *Harvest*—Much earlier than usual; began in August, generally early in September, and finished before the end of the month, with much less expense for the harvesting. *Hay*—Bulk of hay not much above an average crop—40 cwt.; quality very good, much above last year, with a very fair mixture between ryegrass and clover; all over a poor aftermath owing to the dry weather during July. *Meadow Hay*—Above an average where it was hained early; in glens and where eaten down by sheep until May was light and under the average, but all well secured and of good quality. *Potatoes*—Crop fully above an average crop, and more ware per acre—7½ tons; no trace of any disease, and the shaws remained long in ripening, most of varieties planted being King Edward and Kerr's Pink. *Turnips*—Crop very good, above last year; fully 16 tons; good braird all over, but slow in growth until it came to rough leaf, and no second sowing required. *Insects*—No injury from fly or other insects. *Weeds*—Owing to the rain of May land difficult to get cultivated into a good tilth for seed, but, although later in sowing, land was ultimately well prepared and free from weeds. *Pastures*—All natural grasses came early and pastures were good, with abundant grass all summer and autumn. *Live Stock*—All kinds of stock did well throughout the whole season, and the nights being fairly warm, feeding stock and dairy cows throve beyond the average of seasons. Both cattle and sheep kept free from disease. *Clip of Wool*—Clip fully above the average; early clipped, and the quality very good, the summer being seasonable for the flock-masters.

FORFARSHIRE (Western District). *Wheat*—Above average, with 42 to 44 bushels of grain per acre, and excellent straw; seed, 3 to 4 bushels per acre. *Barley*—Some excellent fields, others very disappointing; the average might be 34 bushels per acre, with individual fields up to 56 bushels per acre; grain and straw of average quality; seed, 3 to 4 bushels per acre. *Oats*—A good crop where fields were not damaged with grub, and the outturn of grain good, many fields threshing over 64 bushels per acre, although some, owing to being badly grubbed, would not thresh 24 bushels; Potato oats not so much affected; grain fair; straw good; seed, 4 to 7 bushels per acre. *Harvest*—An early harvest, and although some interruption through wet weather, an excellent finish was got, even in late districts. *Hay*—Below an average crop of hay, but of much superior quality to last year; 30 to 34 cwt. per acre. *Meadow Hay*—Secured in fair order. *Potatoes*—Varied much, say 7 tons per acre; not much disease. *Turnips*—In this district the crop of turnips was, on the whole, excellent, with many fields considerably over 30 tons per acre; brairded all right, except on stiff land. *Insects*—Crops were not injured to any extent, unless the oat crop; Potato oats escaped the ravages of the grub, although many acres of Abundance and such varieties were cleaned up; fields resown did fairly well. *Weeds*—Easily kept in check. *Pastures*—Somewhat bare unless towards the back-end. *Live Stock*—Did not thrive any better than one would have expected in the fine dry and warm weather. Cattle and sheep free from disease, except that grass sickness again claimed many victims. *Clip of Wool*—An average clip on low ground, and fully average on higher grazings.

ABERDEEN DISTRICT.

FORFARSHIRE (Eastern District). *Wheat*—A fine crop, with grain of excellent quality and weight; a yield of 40 bushels grain and 33 cwt. straw per acre; seed, 3½ to 4 bushels per acre drilled in. *Barley*—A fine crop, with excellent straw and well-coloured grain; 44 bushels per acre and 25 cwt. straw; seed, 3 to 3½ bushels per acre drilled in. *Oats*—A good crop, but nothing like the quality of either wheat or barley; yield 50 bushels grain and 25 cwt. straw per acre; seed, 6 bushels per acre, being 3 bushels sown each way. *Harvest*—Commenced 17th August, ten days earlier than usual, and all finished up by the middle of September. *Hay*—A good crop; quality first-rate; crop 45 cwt. per acre. *Meadow Hay*—Less productive than last year. *Potatoes*—Heavier than last year—about 7 tons per acre; some disease amongst early varieties; none amongst the main crop; no new varieties planted to any extent. *Turnips*—A fine crop, Swedes especially being of excellent quality; 22 tons per acre; no trouble with brairding or second sowing. *Insects*—No damage. *Weeds*—A very bad year for "skellies," especially amongst oats; damage greater than usual. *Pastures*—Average growth and better quality than last year. *Live Stock*—Throve very well. Still a considerable death-rate from Anthrax amongst cattle. *Clip of Wool*—An average clip of good quality.

KINCARDINESHIRE. *Wheat*—40 bushels per acre; grain excellent; straw ample both in quantity and quality; seed sown, 3 to 4 bushels per acre; area less than last year. *Barley*—38 bushels per acre; grain of good quality, colour good; average yield of straw; 4 bushels per acre sown. *Oats*—52 bushels per acre; the crop yielded better than it has done for a considerable number of years; straw and grain of excellent quality; quantity sown same as last year. *Harvest*—Rather earlier than usual. *Hay*—About 40 cwt. per acre; crop lighter than last year, but the quality was very good; clover deficient in most crops. *Meadow Hay*—None grown. *Potatoes*—About 7 tons per acre; only slight traces of disease; few new varieties were planted. *Turnips*—Yellows, 15 tons per acre; Swedes, 20 tons per acre; crops being unequal; some crops much above the average where they were sown early, but late sown turnips on stiff ground were slow to braird, and second sowing necessary in a good many places; braird eaten by fly. *Insects*—Oats badly grubbed in many places, and the damage was greater than usual; more attention should be given to good ploughing and rolling with a heavy roller. *Weeds*—Were easier to keep down, and damage consequently less than last year; "skellies" seem to be increasing, but can be dealt with by spraying. *Pastures*—Of average growth and quality, but the season was shorter than last year. *Live Stock*—Throve very well. Cattle and sheep free from disease, but horse sickness seems to be spreading. *Clip of Wool*—Average clip of good quality.

ABERDEENSHIRE (Buchan District). *Wheat*—None grown. *Barley*—About 36 bushels per acre; quality of grain and straw very good; seed sown, 4 bushels per acre. *Oats*—42 bushels per acre; quality of grain and straw very good; seed sown, about 6 to 6½ bushels per acre. *Harvest*—Was earlier than usual, and was rather shorter than for several past years. *Hay*—About 3½ tons; quality very good, but in some places deficient in clover. *Meadow Hay*—Very little grown. *Potatoes*—Crop was extraordinarily heavy; 10 to 12 tons per acre, and all of good quality; no disease; no new varieties planted. *Turnips*—Crop very heavy, and of excellent quality; about 17 to 18 tons per acre; crop brairded well, and no resowing was required. *Insects*—No damage. *Weeds*—No injury; land very clean on the whole. *Pastures*—Rather above the average. *Live Stock*—Throve very well. Cattle and sheep free from disease. *Clip of Wool*—Very few sheep in district.

ABERDEENSHIRE (Central District). *Wheat*—No wheat grown. *Barley*—39½ bushels per acre, 9½ bushels more than last year; straw 22 cwt. per acre, 1 cwt. less than last year; quality of both grain and straw much superior to that of last year, natural bushel weight of grain averaging about 55 lb. per bushel; seed sown, 3 to 3½ bushels per acre, where drill sowing machine used; 4 bushels per acre where broadcast sowing machine used or sown by hand. *Oats*—43 bushels per acre, 3 bushels more than last year; straw 24 cwt. per acre, 1 cwt. less than last year; quality of both grain and straw much superior to that of last year, natural bushel weight averaging about 43 lb. per bushel; seed sown, Potato and all thin-husked varieties from 5 to 5½ bushels per acre where drill sowing machine used, 6 to 7 bushels per acre where broadcast sowing machine used or sown by hand; all thick-husked varieties from 2 to 2½ bushels per acre extra. *Harvest*—Ten to fourteen days earlier than last year; barley harvest commenced from the last week in August to the end of the first week in September; oat harvest from the beginning of the first week to end of the second week in September. Barley harvest completed from 10th to 15th October; oat harvest completed from 15th to 22nd October—seven to ten days earlier than last year. It was an ideal summer; crops were well filled and ripened; heavy rains and wind about the end of August twisted and laid the crops badly, so that harvesting operations were protracted and expensive. *Hay*—29 cwt. per acre, 1 cwt. less than last year. *Meadow Hay*—22 cwt. per acre, 2 cwt. less than last year; quality superior to that of last year, and much about the same for mixture of clover. *Potatoes*—About 7 tons per acre, about 2 tons more than last year; no report of disease; quality generally good; no new varieties reported; Kerr's Pink, Arran Chief, British Queen, Longworthy, Golden Wonder, are varieties generally favoured. *Turnips*—About 15 tons per acre, about 2 tons more than last year; braird rather irregular and patchy; very little second sowing reported; prospects, however, improved considerably in the autumn, and resulted in an average crop of rather better quality than last year. *Insects*—Some damage was done to oat crops after lea by grub, otherwise no injury by insects reported. *Weeds*—No injury reported by weeds; surface weeds were not so evident or vigorous as last year. *Pastures*—During the season were of average growth, and generally supposed to be of better quality than last year. *Live Stock*—Progressed and throve satisfactorily. Cattle and sheep have been free from disease. *Clip of Wool*—Quality and clip of wool average; if any difference, slightly better than last year.

ABERDEENSHIRE (Strathbogie District). *Wheat*—None grown. *Barley*—In the Strathbogie or Huntly district the farmers do not devote much attention to the production of barley, as the crop is often uncertain on account of lateness. The harvest of 1925 being early the crop matured in good time, and a good sample was obtained. The return in grain may be estimated at from 32 to 34 bushels per acre, and the average weight from 55 to 56 lb. per bushel. *Oats*—Were a good crop, particularly after lea, and good also after roots where it had been manured. The practice of applying manure to the crop after roots is becoming more general, and the outlay is generally more than met by the increase in the yield. The crop has threshed much better this season than last year, which was very late, with much of the crops laid long before they were ripe. Unfortunately heavy rains did considerable damage just on the eve of harvest, and not a few fields were difficult to harvest. *Harvest*—Was perhaps begun a little before the usual time, but on account of heavy rains, which prevailed for ten days, there was no progress made. When the weather did settle, the hands were kept busy so that the work was, with few exceptions, overtaken in fairly good time. The quality of the grain was good and the weight satisfactory, and ranged from 41 to 43 lb. per bushel. *Hay*—In general hay was not a heavy crop, there being in most instances a deficiency of clover, which adds so much to the weight of the crop. Fortunately, it was secured in good condition. There is little grown for sale in the district, and the quantity has been diminishing in recent years. *Potatoes*—Potatoes were a fair average crop, but in numerous cases growers complained of the tubers being generally smaller in the run than is frequently obtained in a warm season, such as was experienced last year. The quality is remarkably good, but the price most disappointing to sellers. Of late introduction, Kerr's Pink has been growing in favour as being a potato of good quality, and at the same time giving a good return in weight. *Turnips*—Gave an average bulk of good quality. No trouble was experienced in obtaining a braird, as fly were not so prevalent as usual. As there is such a difference in the soil in the district, it is scarcely possible to state an average crop, but perhaps from 16 to 18 tons per acre may be considered a fair average. *Insects*—No damage. *Weeds*—The summer season being dry and warm, there was little trouble caused by weeds, less than is usually the case. *Pastures*—Were abundant during the season, and stock did well on them. It is always the case when the weather is warm that the beasts thrive and rest better than when it is wet and cold. *Live Stock*—Cattle and sheep free from disease. *Clip of Wool*—The clip was good, and the general weight of the fleece quite up to the average.

BANFFSHIRE (Lower District). *Wheat*—None grown. *Barley*—40 to 45 bushels per acre; quality of grain superior to last year; straw of good quality. *Oats*—60 to 64 bushels per acre; quality of grain poor owing to bad weather during harvest; quality of straw fair—fully better than last year. *Harvest*—Began about middle of August, and lasted to second or third week of October; September was very wet. *Hay*—Somewhat similar to last year, from 38 to 40 cwt. per acre; quality good; better than last year. *Meadow Hay*—None grown. *Potatoes*—Similar to last year; first earlies 5 tons per acre; late varieties from 9 to 10 tons; practically no disease; no new varieties planted; Catriona has been grown now for several years, and is proving to be of fine quality and a good cropper. *Turnips*—About 20 tons per acre, and quality better than last year; crop brairded well; only one sowing required. *Insects*—Oat crop was damaged by grub, the damage being greater than usual. *Weeds*—No injury by weeds. *Pastures*—Were fully better than usual. *Live Stock*—Throve satisfactorily. No disease among cattle or sheep. *Clip of Wool*—About an average clip.

BANFFSHIRE (Upper District). *Wheat*—None grown. *Barley*—Not much in evidence. Following on four late seasons and poor demand for home barley, the area of this grain is now much restricted. Fair crops were got of 4 to 5 quarters per acre of standard weight, however; distillers preferred foreign barley at a higher price. *Oats*—Had a straggling seed-time from middle of April until middle of May. Grub got to work in lea fields, which made them thin, and clean land was pottered in wet. The crop of straw is under average, but grain is of good quality and weight—from 4 to

6 quarters. *Harvest*—Earlier than average—from early in September. The weather was ideal, and crops grew up and ripened fully, and no damage from early frosts. *Hay*—Crop had rather an ungenial start, and never stocked up with clovers properly, consequently of less bulk and weight, being only from 100 stones up per acre. *Meadow Hay*—None. *Potatoes*—Are grown for home consumption only. They were *par excellence* for year. Up-to-Date, Kerr's Pink, and Kepplestone Kidneys are planted. *Turnips*—Generally good; brairding was retarded for lack of moisture the first two weeks of June, and there was some second sowing. The crop bulked late on, and 15 to 20 tons were common weights per acre. *Insects*—The turnip fly got among the weak brairds. *Weeds*—Were well got down before sowing; knot grass and sorrel are the most prevalent. *Pastures*—Were lean for a time, and came up in a very short flush in July; home feeding began early. *Live Stock*—Came off the grass rather lean. Stock of all kinds have been healthy throughout the season. *Clip of Wool*—Sheep came through an open winter, and the clip is average.

INVERNESS DISTRICT

MORAYSHIRE. *Wheat*—About the same as last year; about 25 cwt. grain and 40 cwt. straw. *Barley*—About 18 cwt., or same as last year; straw about 22 cwt., or 2 cwt. less than last year; weight of grain, 56 lb. or standard; colour good; seed, 1½ to 2 cwt. *Oats*—About 13 cwt., or 1 cwt. less than last year; quality good; weight 44 lb. per bushel, or 2 lb. over standard; quality of straw good, about 30 cwt., or 5 cwt. less than last year; seed sown, 2 to 3 cwt., according to variety. *Harvest*—About the usual time, and was much easier than last year; crops secured in good time and in good order. *Hay*—About 27 cwt. per acre, or 3 cwt. less than last year; well mixed, and secured in good order. *Meadow Hay*—Little grown; quantity per acre fully less than last year. *Potatoes*—About 4 tons, or same as last year; very little disease. *Turnips*—About 20 tons, or 4 tons less than last year; the difference was more noticeable in yellows than in Swedes. *Insects*—No noticeable damage, except for grub in the spring, which did considerable damage. *Weeds*—No noticeable damage. *Pastures*—Much the same as last year. *Live Stock*—Cattle and sheep throve well, and were free from disease; grass sickness in horses not yet eradicated. *Clip of Wool*—Clip about average.

NAIRNSHIRE. *Wheat*—None grown. *Barley*—A good crop, mostly secured in good condition; straw short, but grain of excellent quality and weight. *Oats*—A good crop as regards grain, but wanting in bulk of straw. *Harvest*—Earlier than usual; on a few farms about the 1st of August, but not general before the 17th. *Hay*—An average crop as regards ryegrass and clover. *Meadow Hay*—None cut. *Potatoes*—A good crop of particularly fine quality; no disease. *Turnips*—Swedes a good average crop, but yellows very deficient in size and quality; in a few cases a second sowing was required; some signs of mildew noticeable. *Insects*—Not to any great extent. *Weeds*—Not to any great extent. *Pastures*—Not equal to last year, but quite a good average; the good covering which they took on early in the season helped in preventing the scorching which has been so noticeable in other dry seasons. *Live Stock*—Throve well on the pastures. Cattle and sheep free from disease, excepting a few cases of grass sickness in horses. *Clip of Wool*—An average clip of good quality.

INVERNESS-SHIRE (Inverness District). *Wheat*—The area under wheat was very small; about 40 bushels per acre, 60 lb. to the bushel; straw about 36 cwt. per acre; seed, 4 bushels per acre. *Barley*—Area sown about average extent; quality fully up to an average season and good weight per bushel, from 55 lb. to 58 lb.; about 40 bushels per acre; straw, say 28 cwt. per acre; seed sown, 4 bushels per acre. *Oats*—Considerably above an average season, and fine quality; 40 to 42 bushels per acre, 42 to 44 lb. per 336 lb.; straw, 28 to 30 cwt. per acre; seed sown, 4 bushels to 8 bushels per acre according to variety. *Harvest*—Commenced about usual time, and lasted average time; all well secured. *Hay*—The quantity was under an average season, many of the grasses and clover having been crushed out with the lodged crop of 1924; the crop was well harvested and of fine quality, but deficient in clover. *Meadow Hay*—Very little grown. *Potatoes*—Considerably up from previous year; yield of crop about 6½ to 7 tons per acre, and of very fine quality; no disease; and very fair if any of the newer varieties planted. *Turnips*—About 20 tons per acre when the seed germinated early; quality and crop was very good, but many stiff fields failed to germinate until too late owing to dry weather; very little resown. *Insects*—No injury. *Weeds*—Nothing more than usual. *Pastures*—Better than previous year; quite up to an average season. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—About an average clip.

INVERNESS-SHIRE (Skye). *Wheat*—None grown. *Barley*—None grown. *Oats*—Straw was generally short, and grain was not so good as last year, but the crop was secured in good condition; the exceedingly cold and wet weather during May did much harm to this crop. *Harvest*—Commenced earlier than usual—about the beginning of September. *Hay*—Ryegrass was a fair crop, and secured in good condition; clovers do not grow well in the island. *Meadow Hay*—A heavy crop, but difficult to secure at the proper time on account of the broken weather in August; a portion was stacked in bad condition, but none was lost. *Potatoes*—This crop was very promising in July and the early part of August, but blight set in later and the crop was only a fair one. *Turnips*—Only grown on a small scale on the island, but the crop was sound and free from disease. *Insects*—No appreciable damage. *Weeds*—Not more injurious than usual, but always plentiful, and do a lot of harm. *Pastures*—Were good. *Live Stock*—In fair condition. Some disease and losses in cattle, but losses in sheep were not heavy. *Clip of Wool*—An average clip, but sellers experienced a stiffness in the market.

INVERNESS-SHIRE (Lochaber). *Wheat*—None grown. *Barley*—None grown. *Oats*—None grown. *Harvest*—An early harvest, about a fortnight before the usual time. *Hay*—A short straw crop, but a fairly "corny" one; hay crops very good. *Meadow Hay*—Much the same as last year. *Potatoes*—A very good crop, and no disease; Kerr's Pink gave splendid results. *Turnips*—Much better crop than previous year, and much less Finger-and-Toe disease; one sowing only, and a fairly late one; earlier sowing did not do so well. *Insects*—No insect trouble. *Weeds*—Less damage, as land better cleaned. *Pastures*—The pasturage was bare in the autumn, but results on the whole good. *Live Stock*—Throve very well. Cattle and sheep free from disease. *Clip of Wool*—Clip heavier on average.

ROSS-SHIRE (Dingwall and Munlochy). *Wheat*—Very little grown; yield 32 to 36 bushels per acre; seed sown, 3 to 4 bushels per acre. *Barley*—Quality of straw good and also of grain; yield 32 to 40 bushels per acre; seed sown, 3½ to 4½ bushels per acre. *Oats*—A very fine crop of both grain and straw; quality of both the best; yield 44 to 80 bushels per acre; seed sown, 3½ to 6 bushels per acre. *Harvest*—Began about 22nd August, and was got over in about 4 to 5 weeks, weather on the whole being good. *Hay*—Quality above average; yield 1¼ to 1¾ tons per acre. *Meadow Hay*—None grown. *Potatoes*—Crop was a good yield; 4 to 6 tons per acre; no disease worth mentioning; no new varieties planted. *Turnips*—Crop one of the best ever grown in the district: yield, Swedes, 15 to 30 tons per acre; yellows, 10 to 25 tons per acre; later sown crop brairded badly owing to dry weather, but improved when rain came; very little resowing, if any; crop free from disease. *Insects*—Crops not injured by insects. *Weeds*—No injury. *Pastures*—Average growth and quality with last year, but affected by the drought. *Live Stock*—Did not thrive so well as usual. Cattle and sheep free from disease. *Clip of Wool*—Quality good, but clip not quite up to average.

ROSS-SHIRE (Tain, Cromarty, and Invergordon). *Wheat*—Average crop about 36 bushels per acre, being about 4 bushels better than last year; quality good; straw about normal; average sown about 4 bushels per acre. *Barley*—Average crop about 36 bushels per acre, being about 4 bushels better than last year; quality very good, and weight per bushel much above normal; straw rather under normal, and quality good; average sown, about 3½ bushels. *Oats*—Average crop about 48 bushels per acre, being about 4 bushels less than last year; quality good; a serious attack of grub was the reason of the reduced yield; straw very good quality and fair yield; seed sown, 4 to 6 bushels according to variety. *Harvest*—Started about 1st September, about a week earlier than usual time. *Hay*—A good crop; average 32½ cwt. per acre, being about 2½ cwt. less than last year; quality very good. *Meadow Hay*—None grown. *Potatoes*—Average yield about 5½ tons per acre, about 5 cwt. per acre better than last year; not much disease; no new varieties planted. *Turnips*—Swedes about 22 tons per acre, and yellows about 19 tons, about same as last year; crop, on the whole, brairded fairly well; some fields on account of dry weather had to be resown; quality very good. *Insects*—Grub caused a lot of damage to corn crop; it was much worse than usual. *Weeds*—Charlock, as usual, bad. *Pastures*—On account of dry season pastures became very bare and short in light land. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—Slightly better than average.

SUTHERLANDSHIRE. *Wheat*—None grown. *Barley*—Good season for barley, being dry and sunny. Rather dry for this part of the country, but a fair quantity of straw of very good quality notwithstanding. Grain good but practically unsaleable, there being no demand on account of importation of foreign barley. This crop must cease to be grown. *Oats*—Fair crop of straw of very good quality. Grain very good, and threshed out well. All crops secured in good order; both straw and grain above average quality. As in the case of barley, the price of oats is ridiculously low; in fact, grain can hardly be sold. *Harvest*—Began from the 25th to 30th August, being ten days to a fortnight earlier, and in some cases more, than last year. Considerable damage done to ripe crops about the end of August by very high winds. This made cutting difficult, and occasioned some loss of seed. Leading was easily accomplished, the weather being steady and favourable. Harvest finished about the end of September generally, and in late parts by 10th October. *Hay*—A medium crop. Too little rain in June for the light land in this area. Clover not too plentiful, probably owing to cold conditions in spring. Crop on the average lighter than last year, but secured in first-class condition, the weather during hay-making being exceptionally fine. The average crop from 20 to 25 cwt. per acre. *Meadow Hay*—No meadow hay on this, the eastern seaboard of the county. But inland, where meadow hay is grown, the crop was generally good, and secured under very good conditions. *Potatoes*—A much better crop than last year, when disease was prevalent. No disease this year, and potatoes of good quality. No new varieties tried except perhaps in very small quantities. Not a potato-growing area, being too far away from markets. *Turnips*—The summer being dry and fine, turnips did well. Stiff in some cases to germinate owing to drought in June, but eventually came away all right. A good average crop of both Swedes and yellows. Considerable damage done during December on account of frost, but still likely to be sufficient. No second sowing. Probable crop 20 tons Swedes, and 14 to 16 of yellows. *Insects*—Not much damage by insects. In isolated cases fly did some damage, but nothing to speak of. *Weeds*—The weather being fine and dry, weeds much easier dealt with than during the past few seasons. No damage from this source. *Pastures*—Only fair, but, probably with the hot sunny summer, of better feeding quality than for a season or two. *Live Stock*—As is usual in a dry summer, stock throve well. Cattle and sheep quite free from disease. Grass disease bad among horses in this locality; not much to complain of for a season or two, but considerable loss this summer. *Clip of Wool*—Average clip of the usual good quality.

CAITHNESS-SHIRE. *Wheat*—None grown. *Barley*—Came on very well. From 4 to 5 bushels of seed there would be fully 4 to 5 quarters per acre. The straw is not relished by cattle, and the tendency is to grow less and less. *Oats*—Have been a good crop, as the season turned out very favourable. Mostly sown by end of April, the second week being more favourable for sowing; 5, 6, 7, and even 8 bushels of seed have been sown broadcast; 5 and 6 bushels do with the sandy variety, as tillering helps to increase the yield; 7 to 8 bushels are needed where grains are large, as in new varieties with little more than one stalk from a seed. *Harvest*—Was in full swing throughout September, and the weather continued favourable and the ground kept in good trim for the binders. Leading in followed, with occasional showers and breezes, the stooks being secured in very good order, with no great risk of heating. *Hay*—Crop was light compared with some former years, and the clovers were not so abundant. About 2 tons per acre, and it was got in in very satisfactory condition. *Meadow Hay*—Was also secured in fine order, and in usual bulk. *Potatoes*—Flourished throughout the summer, and gave a gratifying yield of 7 to 9 tons per acre. The quality of early and late kinds were of a nice, mealy, palatable flavour, and unusually free from disease. New varieties have been introduced, and Champion is being superseded by Kerr's Pink, Arran Comrade, or King Edward. Beauty of Hebron proved very productive in 1925. *Turnips*—Were affected by Finger-and-Toe or other fungoid parasite. The seeds germinated well, and second sowing was rarely needed. With things so favourable, there were crops of 20 or 30 tons, and in a few cases even heavier. *Insects*—The ravages of Daddy-Longlegs were less than last year. Attempts have been made to cope with the attack by using poisonous bait for the grub, and with promising results. *Weeds*—Thistles, skellock, spurry, and coltsfoot persist in spreading. Spraying with prepared kainit has been tried, with the result of checking the growth of the weeds in some measure. But next year the weeds may be there in abundance. *Pastures*—Produced a good bite till the end of the season, and then the cornfields were available, which relieved the situation. Foggage was soon eaten up. *Live Stock*—Continued to thrive. Foot-and-Mouth disease is not known to the present generation in Caithness, but tuberculosis necessitates every precaution in breeding dairy cows. The dipping regulations have been beneficial not only in helping to exterminate sheep scab, but in freeing the animals from keds and other irritating parasites. *Clip of Wool*—The quality was up to the average, but prices are down.

ORKNEY. *Wheat*—None grown. *Barley*—Yield about 34 bushels per acre, weighing 49 lb. per bushel; seed, 3½ to 4½ bushels per acre. *Oats*—The weather was very wet in May and first of June, and very dry thereafter; the first sown oats were good; the last sown, owing to the drought, were long in starting, and the grain was light; yield of oats about 32 bushels per acre, weighing 39 lb. per bushel, being about the same as last year; seed, 4 to 6 bushels per acre. *Harvest*—Began in the third week of September, being about the same time as the previous year, and was finished about the end of October. *Hay*—Crop was rather thin, and weighed about 20 cwt. per acre, being rather better than last year. *Meadow Hay*—None grown. *Potatoes*—Were a fair crop, weighing about 5 tons per acre, being about 1½ tons per acre less than last year. *Turnips*—Were an irregular crop, and some had to be resown; the average weight was about 11 tons per acre, being about 4 tons per acre less than last year. *Insects*—There was some damage done to the lea oats by grub. *Weeds*—Not much damage. *Pastures*—Were fair. *Live Stock*—Cattle throve fairly well, and were healthy. There were some cases of scab among sheep. *Clip of Wool*—Was about an average.

SHETLAND. *Wheat*—None grown. *Bere*—Average would be about

28 bushels per acre; weight 51 lb. per bushel. *Oats*—27 bushels per acre; weight about 33 lb. per bushel. *Harvest*—Began about a week earlier this year. The crop in some cases stood out until November, but was secured in good order except for some little loss of grain. *Hay*—Crop all over was much about the same as last year. The rotation hay crop was about 26 cwt. per acre, and the meadow hay about 18 cwt. per acre. *Meadow Hay*—Much about the average. *Potatoes*—Crop was fully heavier than last year; average about 7 tons per acre; the quality was not so good; there was a little disease among the second earlies. *Turnips*—Crop much about the same as last year; average about 12 to 13 tons per acre; very little Finger-and-Toe disease has been reported. *Insects*—Except for grub amongst the corn, there has been no insect pests. *Weeds*—No damage has been done by weeds, except in some parts where charlock always does a certain amount of damage. *Pastures*—Were much better than for some years, and stood up longer. *Live Stock*—Did very well this year, and went off the grass in very good condition. Cattle and sheep have been free from disease. *Clip of Wool*—The quality much about the usual, but there is no market for pure Shetland wool.

THE WEATHER OF SCOTLAND IN 1925.

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THIS report consists of (1) a general description of the weather over the Scottish area from month to month; and (2) a selection of rainfall returns in which each county of Scotland is represented by one or more stations. It is to be noted that all the temperature readings referred to are, unless otherwise stated, from thermometers exposed in the regulation "Stevenson Screen."

JANUARY.

The months of November and December 1924 had been exceptionally mild; but the year 1925 opened with wintry weather. By 6th, however, there was a return to mild conditions, and thereafter temperature for the most part, and especially at night, was decidedly above the average. The extremes were 56° at Achnashellach on 13th and at Gordon Castle on 18th, and 16° at Braemar on 5th.

As in December 1924, an interesting feature of the month's rainfall was a well-marked deficiency in the low-lying districts of Moray, Banff, and Aberdeenshire. Elsewhere the distribution was somewhat irregular, with a moderate excess over considerable areas. Heavy falls, partly of snow, were general on 1st and 2nd; from 8th to 27th there were various fair periods, though heavy falls in many districts on 13th and 17th; and on 28th conditions became completely unsettled. On 13th Killin had 2·43 in., and on 30th Kinlochquoich as much as 3·27 in.

There was much stormy weather, notably on 1st and 2nd, around 14th, on 22nd, and from 29th onwards. Early in the month heavy floods occurred, especially on the Borders. Sporadic thunderstorms were experienced, chiefly at the beginning and end of the month, and especially in west and north-west.

The dry Moray Firth area had more than the average amount of sunshine; but in general the month was rather cloudy.

FEBRUARY.

The mean temperature of the month was decidedly below that of the very mild month of January; but in some districts it was slightly above the average, due mainly to the relative mildness of the nights. There were some decidedly cold days, especially about the middle of the month and from 21st to 26th, and the last week was much colder than the first.

Rainfall was above the average in practically all districts; but towards the west the excess was only moderate, whilst elsewhere it was very considerable. In the wetter areas aggregates were, as a rule, less than those recorded in 1923; but at Grantown-on-Spey the month was the wettest February for at least forty-five years, and at Edinburgh it was the wettest since 1903. The heaviest general falls occurred on 7th, 8th, and 14th. From 22nd onwards there was an alternation of heavy and moderate falls, but only trifling amounts in the extreme north-west.

There was again much stormy weather, with wintry conditions and snow in many districts around 6th, on 14th, and from 21st to 23rd. Snow lay to a depth of 6 in. in Lower Annandale on 14th, and at Greenock there was a fall of 4½ in. on 23rd. Brief thunderstorms occurred here and there on several days.

There were a few very sunny days; but sunshine aggregates hardly reached the average.

MARCH.

With various changes in wind direction temperature fluctuated considerably. The coldest periods were with northerly winds from 8th to 12th and for two or three days around 20th, whilst on 31st there was a sharp drop in temperature. Except at these times the wind was from a westerly point, and the weather on the whole mild, especially about the middle of the month.

In the south-east of Scotland and some northern districts precipitation was above the average; but elsewhere there was a deficiency, and this was most pronounced in Central Perthshire and in south and south-west. But even within the driest areas amounts were appreciably above the trifling amounts recorded in March 1924. Moderate falls were experienced in south-east on 1st; in various districts between 7th and 10th, and around 14th, 20th, and 25th; whilst on 31st very heavy falls of snow, rain, or rain followed by snow were general, and in Forfarshire, Fifeshire, and the Lothians more than half the month's aggregate was accounted for on that day.

Snow fell in the north on 7th and spread over a great part of Scotland on 8th and 9th; on 21st a fairly general snowstorm was most severe in Aberdeenshire and on the Borders; whilst the snowfall of 31st appears to have been heaviest along the Forth-Clyde belt.

Sporadic thunderstorms occurred in the north between 6th and 9th; and here and there between 18th and 25th.

The fourth week was very sunny, and sunshine aggregates for the month appear to have been deficient in the north but above the average towards the south.

APRIL.

Rather cold weather at first was followed by an appreciable rise of the thermometer from about 11th to 14th, whilst from 15th onwards temperature was decidedly variable,—high around 20th but decidedly low at the end of the month. The mean temperature was rather below the average, and the month the first with an actual temperature deficiency since September 1924.

Conditions were rather unsettled early in the month; but the period from 7th to 11th was generally fair. After heavy rains in central and western districts from 12th to 15th, and a brief interlude on 16th, there were very heavy falls on the night of 17th to 18th, more particularly in the Clyde area. Conditions were again unsettled, especially in the south, from 21st to 25th, with moderate rains in the east towards the end of the month. Except in the far north there was a decided rainfall excess; a great part of the Forth-Clyde belt had more than twice the average; and at Greenock the only wetter April on record was that of 1904. Within the wettest areas the month's excess was largely accounted for between 14th and 17th.

The weather was very stormy during the third week; snow fell in some districts on 15th and 29th; at Edinburgh on 1st as a result of the end March storm snow lay to a depth of 6 in.; and the heavy rainfall of 17th -18th caused extensive flooding. Thunder occurred rather widely in west and south on 8th and 9th, and in east on 18th and 25th.

There was a good deal of fog from 7th to 11th; but some very sunny days brought sunshine aggregates above the average in many districts.

MAY.

The mean level of the barometer was the lowest recorded in Scotland in May for at least 70 years, and the weather in general was very unsettled. The days were frequently cold, especially early in the month and during the fourth week: the nights, on the other hand, were decidedly mild.

Practically all districts, except part of the Spey Valley, had a rainfall much above the average. Indeed, Central and a great part of Southern Scotland had considerably more than twice the average, and, *e.g.*, Galashiels fully thrice. There were some fair periods and the excess was largely accounted for by various heavy falls during the last week (2·41 in. at Killin on 30th). As a whole the month was less noteworthy than the very wet May of 1906 ; but at Greenock and Paisley it was the wettest May for at least 40 years, and at Rothesay apparently the wettest for at least 120 years.

Towards the end of the month flooding occurred. Thunderstorms were very frequent, and sunshine aggregates were below the average.

JUNE.

After the first three or four days very stable conditions developed, and the month as a whole ranks as a very warm, dry, and sunny one. Temperature was at first quite moderate, but from a rather low level on 8th there was a rapid rise to a maximum on 10th (86° at Kelso and Perth), with very warm weather for a few days, and in the west until the end of the month. In the east, on the other hand, northerly winds were very cold. In most districts the month as a whole was the warmest June since 1906.

After trifling rains until 5th, parts of Perthshire and Forfarshire were absolutely rainless until 28th or 29th, and elsewhere conditions of drought were broken only by slight falls on 13th and 19th. Over wide areas in central and southern Scotland aggregates were less than one quarter of the average, but in most districts the rainfall was hardly so low as in the very dry June of 1921. The drought was even more acute in England than in Scotland.

A little thunder occurred. Towards the north sunshine aggregates hardly reached the average ; but elsewhere the month was exceptionately sunny, and at Edinburgh it was not only the sunniest June but the sunniest month on record.

JULY.

There were two well-defined outbursts of heat, around 12th and around 22nd, with temperature well above 80° in various districts (85° at Ruthwell on 22nd). The least warm periods were at the beginning and end of the month, and towards the north-east there some rapid fluctuations of temperature with shifts of the wind. The mean temperature of the month was considerably above the average.

There was a little rain early in the month ; but from 10th onwards for about a fortnight the only rain of importance occurred on 17th. Later, on 25th, some very heavy falls were experienced within an hour or two during a thunderstorm,—near Murthly as much as 2·52 in.,—with rather heavy falls in eastern districts on 26th and towards north-east on 29th. In most districts there was a decided deficiency, with the month the driest July since 1919; but various places in north and north-east had a moderate excess.

The thunderstorm of 25th was widely experienced and of great local severity, and on the whole thunder was fairly frequent.

Towards the north-east the month was somewhat cloudy; but elsewhere it was decidedly sunny.

AUGUST.

Temperature was rather variable,—fairly high on 8th; from about 14th to 17th; and exceptionally along the east coast on 31st, which was the warmest day of the month at Aberdeen. In most districts the coldest night was that of 25th-26th. The month was the first warm August since 1918, and the fourth month in succession with a mean temperature above the average.

There were various moderate rainfalls during the first week, and at Dumfries on 8th as much as 1·27 in. or more than the entire month's rainfall at Aberdeen, whilst on the afternoon and evening of 11th heavy rain was general except in some northern areas. In the forenoon or early afternoon of 12th dry conditions had developed in most districts, but in the extreme south heavy rain persisted throughout the day. On 20th conditions again became unsettled, with fairly heavy general falls on 22nd, 23rd, and 26th. In Mid-Lothian and in some Border and southern districts aggregates were slightly above the average; but in general the month was decidedly dry, and at Aberdeen and Grantown-on-Spey it was the driest August since 1899.

Thunderstorms were again rather frequent, except in the north.

There were a few very sunny days, but sunshine aggregates were below the average except in some western districts.

SEPTEMBER.

Cold north-westerly winds were very early in evidence, and, except for a day or two around 15th, the thermometer for the most part remained at a low or moderate level until 28th, when warm south-westerly winds set in. At Aberdeen the 28th was the warmest day of the month, with a maximum of 66° as compared with only 50° two days before. The month as a whole may be classed as decidedly cold, though much less cold than the September of 1918.

An outstanding incident was a severe rainstorm on 9th to 10th over a great part of eastern Scotland. Within a quadrilateral indicated by a line running from Arbroath to Perth, south to Leadhills, and thence eastwards through Hawick, few places had less than 1 in., whilst Arbroath had 2·29 in., the Lammermoors and adjacent low-lying regions more than 2 in., and Galashiels as much as 2·87 in. At this time most western areas had little or no rain, and the coastal fringe of Banffshire and Aberdeenshire only nominal amounts. For the rest, during the first few days many districts had only trifling rains; on 7th there were some fairly heavy falls; from 17th to 19th rain was general; and 22nd, 25th, and 28th were wet in various districts. For the whole month, a very large excess in eastern and some northern districts contrasted with a decided deficiency towards the north-west. Edinburgh had appreciably more rain than Fort William.

Snow fell on the northern mountains down to the 2000-ft. level on 3rd-4th,—an abnormally early date: and on 9th there was again snow on high ground in both north and south. Thunderstorms occurred here and there on a few days. The month was decidedly cloudy towards the north; but sunny, on the whole, elsewhere.

OCTOBER.

On 5th the thermometer rose above 70° in various districts; but by 8th the nights had become rather cold, and by 13th day temperature was also low. There was soon a return to very mild conditions, and the last two nights of the month were curiously mild for the time of year.

During the first half of the month eastern and southern districts had only trifling rains, whilst elsewhere moderate to heavy falls occurred around 2nd and 5th and from 12th to 14th. From 16th onwards rain fell almost daily in some western districts, and rather heavy falls were general on several days, especially on 26th, when considerable areas had more than 1 in. In east, north-east, and north-west, aggregates were decidedly below the average; elsewhere there was a slight to moderate excess.

Snow fell in northern districts on 13th, 14th, and 17th, and thunder occurred here and there on a few days—in Shetland early in the month, and towards north-east on 14th.

There were some rather foggy days; but in eastern districts, at any rate, sunshine aggregates were above the average.

NOVEMBER.

The very mild conditions which had prevailed during the last ten days of October were maintained during the first three or four days of November; but temperature then fell sharply and remained at a low or very low level until the end of the month. Both days and nights were very cold; but less cold than in November 1919.

The month was dry or abnormally dry in all districts. The greater part of Scotland had less than half the average rainfall; considerable areas only one-third or even less; and Greenock and Fort William the lowest rainfall recorded in November for at least fifty years. Conditions were unsettled during the first few days; but thereafter, except for moderate to fairly heavy falls in north and west on 15th, there was no precipitation of importance until about 24th, when snow fell in the north. The month closed with general snow and rain in moderate amounts.

Snow fell rather heavily in the north from 7th to 10th. On 25th conditions became very wintry, with extremely stormy weather in the North Sea and along the eastern seaboard of Great Britain. Thunder occurred at Kelso on 27th.

Dense fog occurred locally chiefly during the third week. especially in the Forth and Clyde areas,—in Glasgow almost continuously from 17th to 23rd, and in Edinburgh from the afternoon of 16th to the evening of 18th. In spite of this, sunshine aggregates were in many districts much above the normal, and at Edinburgh the month was the sunniest November since 1909.

DECEMBER.

The month was for the most part very wintry, and on the whole the coldest December since 1892; and for so cold a November-December period we must go back to 1878. Northerly to easterly winds were much in evidence; but from about 8th to 11th there was a brief incursion of warmer air, and on 27th there was a definite change to a mild southwesterly type of weather. On 23rd the thermometer at Braemar fell to 2°.

Except in the north there was no rain from 1st to 6th, whilst from 7th to 9th or 10th there were some considerable falls,—at Achnacarry on 8th as much as 2·08 in. After various snowstorms very heavy rains occurred towards the end of the month, and especially from 27th to 29th. In the south-east of Scotland and in some northern areas the aggregate precipitation was above the normal; but in many districts there was a decided deficiency.

Snow fell in the north on 1st, whilst, later, snowstorms were most general and most severe on 18th and 19th, and from 23rd to 25th. With melting snow and heavy rain many rivers were in flood at the end of the month. Around 20th and during the last week very stormy weather prevailed.

Thunderstorms occurred in Ayrshire on 14th, here and there on 23rd and 24th, and in some western and central districts on 30th.

There was some very gloomy weather; but except in the north sunshine aggregates were above the normal.

An earthquake shock of considerable intensity was experienced in Mull and at Oban on 23rd, and less acutely at Comrie and in parts of Lanarkshire.

General Note.

The most notable features of the year were perhaps the drought of June, which was much more acute in England than in Scotland, the dryness of November, and the wintry weather which lasted with only slight breaks from early in November until 26th December. Rainfall was slightly above the average in three main areas,—the Southern Uplands, from the Grampians to the Moray Firth, and Sutherlandshire. Elsewhere there was, as a rule, a slight deficiency.

Rainfall Records for 1925, in Inches.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Shetland—Lerwick	5·34	6·29	2·69	2·89	2·22	1·00	1·66	2·39	3·74	4·72	2·42	4·04	39·40
Orkney—Deerness	2·96	3·30	3·04	2·85	2·68	1·46	1·75	2·21	3·49	4·40	2·25	2·74	33·13
Caithness—Wick	1·54	3·04	2·31	1·65	2·11	1·36	3·05	1·85	3·47	2·91	1·87	2·59	27·75
Sutherland—Tongue	4·35	5·21	2·82	3·09	3·97	1·68	2·74	2·67	5·25	4·35	3·22	4·54	43·89
Lairg	2·81	5·49	2·89	2·85	2·90	·88	1·96	1·16	2·54	3·19	·86	4·46	31·99
Ross and Cromarty—													
Fortrose	1·95	2·41	1·58	1·19	2·07	·33	1·38	·78	2·87	1·11	·48	1·89	18·04
Ardross Castle	4·65	6·92	3·30	3·15	3·80	·68	2·90	1·51	2·62	2·84	1·77	4·74	38·88
Lochcarron	6·92	7·37	6·58	6·04	5·52	3·27	3·84	3·75	6·74	5·62	3·59	7·49	66·73
Stornoway	5·82	5·38	3·93	3·80	3·67	·98	2·08	3·16	3·83	4·73	4·34	5·78	47·50
Inverness—Kingussie	4·15	6·07	2·67	2·94	2·90	·55	2.31	1·51	2·58	2·06	·91	3·60	32·25
Glenquoich	16·26	9·84	7·47	10·27	10·53	3·57	3·76	4·57	7·03	9·48	2·65	13·87	99·30
Fort-William	10·33	8·27	4·24	8·32	9·42	1·83	2·70	4·38	3·67	6·66	2·18	8·52	70·52
Portree	8·60	6·09	3·95	5·52	6·62	2·08	2·61	3·83	4·75	5·87	4·21	7·16	61·29
Nairn—Nairn (Delnies)	1·92	2·67	1·96	1·65	1·85	·51	1·90	·98	3·86	1·68	·68	1·85	21·51
Moray—Gordon Castle	1·32	3·40	2·35	1·92	2·70	1·02	4·00	1·60	4·15	2·67	1·82	2·39	29·34
Grantown	2·85	5·65	3·67	2·51	1·99	·77	2·82	1·28	4·94	2·51	1·59	2·30	32·88
Banff—Banff	·48	3·19	1·85	1·29	2·70	1·02	3·48	1·11	3·85	2·15	2·30	2·37	25·79
Aberdeen—Fyvie Castle	1·08	4·90	2·97	2·51	2·90	1·12	3·11	·82	4·26	2·68	2·81	4·46	33·62
Peterhead	·89	3·14	1·74	2·19	3·42	1·68	2·00	2·21	5·67	3·10	2·12	2·80	30·96
Aberdeen (King's Coll.)	1·41	3·89	1·80	2·31	2·94	·93	3·04	1·10	2·54	2·68	1·90	1·81	26·35
Balmoral	3·49	6·69	3·01	2·93	3·47	·56	3·48	1·46	3·54	2·46	2·06	3·95	37·10
Kincardine—													
Balmakewan	1·90	4·07	1·36	3·22	3·47	·78	2·67	2·26	3·07	2·09	1·49	2·39	28·77
Forfar—Montrose	1·52	2·89	·95	2·43	2·89	·77	1·90	1·91	2·96	2·07	·86	1·89	23·04
Dundee (E. Necropolis)	2·01	3·25	1·48	2·87	3·77	·61	1·76	1·81	2·92	2·36	·83	2·57	26·24
Forfar	2·25	4·82	1·18	4·09	3·76	·71	1·56	2·12	3·33	2·68	·74	3·03	30·27
Lintrathen	2·80	4·79	·91	3·18	4·55	·43	1·74	3·40	2·26	3·33	·90	2·79	31·08
Perth—Blair Castle	3·60	5·14	2·13	2·75	4·62	·50	2·38	2·94	2·69	3·63	·72	3·59	34·69
Crieff	4·34	4·71	1·26	4·40	6·19	·51	2·99	4·31	2·90	4·11	·75	4·30	40·77
Perth	2·92	3 15	1·43	2·70	3·85	·29	1·69	1·99	3·24	2·38	·58	3 39	27·61
Killin	10·32	7·10	1·80	8·20	9·19	·97	2·80	3·05	2·72	6·70	·66	7·08	60·59
Aberfoyle	7·10	7·50	2·70	7·10	9·65	·55	1·80	5·05	3·40	4·60	1·10	4·25	54·80
Fife—Cupar	3·01	3·81	1·91	2·92	3·81	·53	2·18	2·74	3·61	1·88	1·28	2·29	29·97
Kinross—Loch Leven	3·56	4·05	1·48	4·09	5·66	·33	1·35	3·74	3·21	2·93	·94	2·47	33·81
Clackmannan—													
Tillicoultry	4·52	4·73	1·84	4·32	5·09	·31	1·87	4·07	4·16	3·02	1·52	3·05	38·50
Argyll—Gruline (Mull)	7·83	6·44	3·52	9·78	8·60	2.43	3·44	5·32	5·76	6·85	3·66	7·16	70·79
Oban	5·40	4·39	2·39	4·78	7·05	1·77	2·98	3·47	4·25	4·27	2·03	3·98	46·76
Glenorchy Manse	7·60	6·77	4·22	7·09	8·74	2·53	3·42	5·25	6·36	7·50	1·56	7·54	68·58
Ardrishaig	5·58	5·61	4·16	6·90	7·15	1·74	3·54	4·99	5·36	7·20	2·03	4·47	58·73
Campbeltown	5·17	6·79	2·25	5·36	7·39	1·12	2·40	3·22	4·90	6·24	2·98	4·32	52·14
Bute—Rothesay	4·87	3·74	3·52	5·52	7·79	1·41	2·30	5·64	4·31	5·33	1·52	3·72	49·67
Stirling—Stirling	4·96	4·64	1·47	3·98	6·31	·37	1·04	3·23	2·79	3·85	·51	3·45	36·60
Dumbarton—													
Arrochar	9·98	9·57	4·86	10·09	11·75	1·91	3·85	5·86	6·59	9·39	2·28	7·58	83·71
Helensburgh	5·75	4·42	3·06	6·40	7·39	1·22	2·31	4·35	4·38	4·65	1·09	4·51	49·53
Renfrew—Greenock	6·68	5·33	3·55	7·24	9·22	1·53	2·23	4·25	3·88	6·24	1·46	4·04	55·65
Paisley	5·49	4·08	2·51	5·47	6·71	·56	1·75	3·30	3·08	4·12	·89	3·93	41·89
Ayr—													
Kilmarnock (Agric. Coll.)	3·73	3·18	2·18	3·98	6·26	·44	2·63	3·51	3·14	3·60	2·19	3·67	38·51
Ayr	3·44	4·33	2·14	3·86	6·74	·34	1·81	2·61	2·70	3·21	1·50	3·90	36·58
Pinmore	4·27	6·30	1·69	4·50	5·69	.55	2·67	3·00	4·37	6·18	2·39	4·56	46·17
Muirkirk	4·58	4·73	1·67	6·26	5·88	·55	4·14	3·37	3·30	4·82	1·74	5·11	46·15
Lanark—													
Biggar	4·76	5·04	2·07	4·31	4·68	·36	2·05	2·62	4·36	3·54	1·37	3·22	38·38
Carmunnock	5·56	4·73	2·88	5·23	7·56	·33	2·05	3·65	3·51	3·52	·96	4·02	44·00
Leadhills	6·58	5·99	1·85	8·36	8·97	·85	3·85	5·55	4·31	9·98	1·96	6·13	64·38
Linlithgow — Linlithgow	4·48	3·25	2·98	4·96	5·84	·38	1·90	3·41	4·08	2·64	·65	2·47	37·04
Mid-Lothian—													
Glencorse	3·94	5·85	2·43	4·63	4·94	·55	1·66	2·80	4·39	2·12	·67	3·48	37·46
Edinburgh (University)	2·36	2·99	2·50	2·70	3·88	·41	1·59	3·54	4·34	1·79	·67	3·54	30·31
Haddington—													
North Berwick	1·17	3·42	2·15	2·24	3·44	·70	1·42	2·29	4·42	1·24	·92	2·42	25·83
Stobshiels Reservoir	2·68	3·31	2·76	2·43	3·21	1·00	1·90	2·69	5·10	2·10	1·05	2·50	30·73
Berwick—Marchmont	1·88	5·28	3·04	3·39	4·05	·28	2·01	3·22	4·69	2·17	2·16	3·99	36·16
Coldstream, The Hirsel	·85	3·67	2·08	2·38	3·28	·25	1·11	2·87	5·16	1·18	1·09	3·50	27·42
Peebles—Castlecraig	3·72	5·05	2·98	4·78	4·83	·37	2·21	2·33	4·22	3·00	1·28	4·10	38·87
Selkirk—Fairnilee	3·15	5·16	1·66	3·21	5·28	·52	1·17	3·50	4·41	2·94	1·31	3·92	36·23
Roxburgh—													
Branxholme	3·70	5·10	2·45	3·93	5·79	·68	1·34	4·05	3·58	3·40	1·56	4·20	39·78
Kelso (Broomlands)	1·08	4·10	1·89	2·24	2·78	·25	1·68	1 99	3·89	1·84	·96	3·34	26·04
Dumfries—Dumfries	3·34	4·61	·72	4·19	4·75	·27	1·65	4·00	2·46	4·66	1·63	3·14	36·32
Moniaive (Glencrosh)	5·68	6·29	1·38	6·40	6·79	·33	3·04	3·99	2·14	5·75	2·01	6·48	50·28
Castle Milk	3·50	5·85	1·09	4·10	6·99	·33	2·41	5·58	3·32	5·36	1·64	3·95	43·62
Langholm	5·86	8·71	1·82	5·70	8·02	·58	2·28	6·83	4·69	4·58	1·64	5·21	55·92
Kirkcudbright—													
Cargen	4·44	6·11	1·14	4·84	6·21	·23	2·04	6·58	2·94	6·00	2·08	4·47	47·08
Dalbeattie (Kirkennan)	4·67	6·04	1·22	5·18	6·68	·28	2·37	5·25	3·22	5·53	2·39	4·46	47·29
Carsphairn (Shiel)	9·90	10·83	3·48	8·20	8·73	·47	2·66	4·70	5·89	9·78	2·47	8·48	75·59
Wigtown—Monreith	3·20	4·78	1·20	3·16	4·30	·43	2·57	3·20	3·27	3·88	2·47	4·57	37·03

AGRICULTURAL STATISTICS.—Returned upon 4th June 1925—(*Compiled from the Government Returns*).

Table No. 1.—Acreage under Crops and Grass in each County of Scotland.

Counties.	Total Acreage under Crops and Grass.	Arable Land.	Permanent Grass.	Corn Crops.								Potatoes.	Turnips and Swedes.	Mangolds.	Cabbage.	Rape.	Vetches or Tares (Seed).	Vetches, Tares, Beans, Mashlum, &c. (Fodder).	Small Fruit.	Rye-grasses and other Rotation Grasses and Clover.	Other Crops.	Bare Fallow.
				Wheat.	Barley, including Bere.	Oats.	Mixed Grain.	Rye.	Beans.	Peas.	Total.											
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres	Acres.	Acres	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres	Acres.	Acres.	Acres.	Acres.	Acres.
1. **Aberdeen** . .	625,817	585,556	40,261	18	19,753	183,620	69	84	11	93	203,648	7,553	81,405	..	138	97	36	2,417	252	289,471	220	319
2. **Argyll** . .	125,081	53,709	71,372	..	1,211	15,397	68	453	16	1	17,146	2,871	4,762	2	41	141	1	105	16	28,122	124	378
3. **Ayr** . . .	312,571	139,515	173,056	858	233	39,367	13	117	196	5	40,789	8,605	7,006	223	235	619	1	1,116	264	79,170	1,018	474
4. **Banff** . . .	157,324	147,629	9,695	..	7,770	46,602	22	76	31	6	54,507	1,744	19,829	..	6	2	34	625	7	70,804	15	56
5. **Berwick** . .	189,061	131,524	57,537	1,194	15,637	28,149	..	39	156	3	45,178	2,573	20,593	75	62	1,110	9	266	12	61,551	16	79
6. **Bute** . . .	25,411	15,146	10,265	1	10	4,739	2	37	10	2	4,801	1,088	1,235	4	17	49	..	27	15	7,707	19	184
7. **Caithness** . .	106,458	79,794	26,664	..	612	29,694	1	6	..	..	30,313	1,225	11,051	..	7	8	1	237	2	36,842	11	97
8. **Clackmannan** .	15,293	7,622	7,671	205	202	2,931	9	10	242	1	3,600	401	727	..	13	52	..	106	26	2,491	4	202
9. **Dumbarton** .	46,135	22,979	23,156	465	17	6,695	10	15	11	1	7,214	2,276	1,354	8	57	112	1	72	84	11,684	35	82
10. **Dumfries** . .	244,750	126,349	118,401	44	306	37,434	12	113	4	2	37,915	3,296	14,789	138	148	997	..	136	57	68,556	111	206
11. **East Lothian** .	109,323	83,727	25,596	4,228	15,259	15,795	39	31	75	185	35,612	8,076	12,405	278	653	508	9	351	234	24,742	555	304
12. **Fife** . . .	241,982	166,547	75,435	10,933	14,719	41,804	140	1,054	248	16	68,914	16,981	21,349	18	143	685	19	420	248	56,291	626	858
13. **Forfar** . .	245,595	218,644	26,951	9,824	17,588	54,322	481	925	17	19	83,176	17,828	30,341	11	155	148	7	470	729	85,316	186	277
14. **Inverness** . .	149,960	83,634	66,326	..	4,540	29,737	398	729	..	.	35,404	5,255	8,998	3	56	17	3	151	9	33,337	21	380
15. **Kincardine** .	117,964	108,684	9,230	899	9,542	29,351	51	30	10	15	39,906	4,529	15,088	..	13	4	3	476	55	48,455	77	73
16. **Kinross** . .	33,547	21,180	12,367	152	166	6,664	32	57	..	..	7,071	1,233	2,210	..	14	111	..	42	7	10,418	28	46
17. **Kirkcudbright** .	182,711	92,502	90,209	8	51	22,119	1	7	7	1	22,194	1,359	9,335	56	91	1,322	2	97	23	57,822	38	163
18. **Lanark** . .	243,822	125,469	118,353	1,830	77	36,497	35	88	4	18	38,499	5,172	9,203	22	515	1,305	11	418	1,873	67,282	486	683
19. **Mid-Lothian** .	118,420	76,194	42,226	5,060	4,814	20,501	20	16	2	60	30,473	6,438	9,579	89	478	1,068	2	151	209	27,231	420	106
20. **Moray** . .	97,906	90,229	7,677	380	9,645	24,159	25	309	23	8	34,549	1,585	13,358	5	14	54	13	274	21	40,278	47	81
21. **Nairn** . . .	25,334	23,868	1,466	67	2,309	6,209	1	35	..	1	8,622	261	3,777	..	2	18	1	90	1	11,059	10	27
22. **Orkney** . .	107,203	92,627	14,576	.	3,678	32,751	8	29	..	..	36,466	2,204	13,329	..	18	1	1	169	..	40,339	11	89
23. **Peebles** . .	50,804	23,478	27,326	.	93	5,870	5	1	..	1	5,970	301	2,889	12	45	522	..	40	22	13,638	38	1
24. **Perth** . . .	325,394	222,232	103,162	6,461	3,860	67,382	301	691	763	7	79,465	17,474	24,046	26	122	1,020	7	750	2,669	94,767	412	1,474
25. **Renfrew** . .	83,026	32,502	50,524	1,490	7	9,503	6	22	61	1	11,090	2,967	1,977	7	143	223	5	59	106	15,711	106	108
26. **Ross & Cromarty**	137,940	109,606	28,334	599	7,522	31,015	60	356	..	3	39,555	7,150	13,732	11	54	75	15	361	9	48,200	195	249
27. **Roxburgh** . .	176,777	112,209	64,568	352	9,225	24,228	..	20	20	3	33,848	1,188	16,818	32	94	679	2	107	24	59,028	72	117
28. **Selkirk** . .	29,612	14,410	15,202	..	229	3,758	10	4	..	1	4,002	147	2,152	..	28	79	2	23	4	7,940	2	31
29. **Shetland** . .	26,262	13,127	13,135	..	623	6,244		7	..	..	6,874	2,042	991	..	592	..	..	2	..	2,009	10	607
30. **Stirling** . .	112,424	51,741	60,683	1,502	920	17,798	91	25	1,384	3	21,723	3,181	3,572	8	73	512	7	685	147	20,837	83	968
31. **Sutherland** .	30,974	21,950	9,024	..	291	7,431	..	4	..	..	7,726	1,108	2,649	..	7	6	..	28	1	10,308	3	114
32. **West Lothian** .	56,311	33,014	23,297	2,035	1,841	10,438	42	9	28	1	14,394	2,506	3,187	11	87	582	2	165	41	11,801	41	197
33. **Wigtown** . .	154,005	101,962	52,043	12	171	27,791	11	11	90	..	28,086	1,538	12,204	138	39	281	2	217	22	59,310	47	78
Total . .	4,705,197	3,229,359	1,475,838	48,617	152,921	925,995	1,971	5,360	3,409	457	1,138,730	142,155	395,940	1,117	4,160	12,607	196	10,653	7,189	1,502,517	5,032	9,068

TABLE No. 2.—TOTAL PRODUCE OF WHEAT, BARLEY, AND OATS, ACREAGE and YIELD per Acre in the Year 1924, compared with the YIELD for the Year 1923, and the AVERAGE of the Ten Years, 1914-1923, in each COUNTY of SCOTLAND.

COUNTIES.	WHEAT.					BARLEY, INCLUDING BERE.					OATS.				
	Total Produce in 1924.	Acreage in 1924.	Yield per acre.		Average of the Ten Years, 1914-1923.	Total Produce in 1924.	Acreage in 1924.	Yield per acre.		Average of the Ten Years, 1914-1923.	Total Produce in 1924.	Acreage in 1924.	Yield per acre.		Average of the Ten Years, 1914-1923.
			1924.	1923.				1924.	1923.				1924.	1923.	
	Qrs.	Acres	Bush	Bush	Bush	Qrs.	Acres	Bush.	Bush.	Bush.	Qrs.	Acres.	Bush.	Bush.	Bush.
Aberdeen	180	50	28.6	20.0	30.7	70,000	18,901	29.4	29.1	32.1	831,000	188,328	35.3	33.0	35.6
Argyll	..	.	..	.	*30.[illegible]	5,100	1,226	33.0	31.9	36.2	74,000	16,007	37.0	35.3	35.1
Ayr	3,900	726	42.8	44.8	45.9	740	166	35.6	35.0	39.9	240,000	41,658	46.1	43.7	47.5
Banff	..	..	.	24.0	*29.7	35,000	7,271	38.7	37.3	35.7	273,000	48,067	45.5	44.7	39.6
Berwick	6,300	1,285	38.9	39.9	38.0	71,000	15,680	36.4	35.8	33.7	152,000	28,758	42.2	39.2	37.6
Bute	—§	3	—§	37.4	41.0	140	29	38.3	38.2	40.2	24.000	4,823	40.1	40.1	41.0
Caithness	..	.	..	.	.	2,400	545	35.5	33.0	32.2	136,000	29,876	36.3	28.4	31.1
Clackmannan	1,100	228	37.9	41.3	40.3	910	183	40.0	40.0	34.5	20,000	3,267	47.8	36.4	37.8
Dumbarton	1,300	378	26.6	31.0	37.1	60	12	38.8	48.8	38.3	37,000	7,146	41.1	39.7	42.1
Dumfries	170	37	37.5	37.1	38.0	1,400	307	36.8	36.2	37.8	196,000	38,692	40.4	38.2	37.9
East Lothian	23,000	4,115	45.1	46.7	43.1	87,000	14,923	46.3	45.9	44.1	112,000	16,805	53.2	52.9	49.9
Fife	49.000	11,812	33.1	37.0	36.7	61,000	14,101	34.8	39.6	39.8	217.000	43,452	39.9	47.9	45.1
Forfar	43,000	9,985	34.4	35.7	35.9	76,000	17,850	34.1	32.8	34.4	326,000	55,696	46.9	45.6	48.5
Inverness	160	84	38.0	40.0	40.2	15,000	4,678	26.3	23.8	25.4	108,000	30,514	28.4	25.1	29.1
Kincardine	4,100	910	36.1	37.2	36.5	44,000	9,948	35.0	35.2	35.0	179,000	30,014	47.6	45.3	39.6
Kinross	700	149	37.7	41.1	39.9	720	179	32.0	39.7	36.2	32,000	6,840	37.3	32.5	37.7
Kirkcudbright	30	8	35.3	34.9	36.3	140	31	36.2	42.5	38.6	98,000	22,982	34.3	33.1	35.7
Lanark	6.600	1,502	35.2	36.4	34.9	430	107	32.0	34.0	34.0	216,000	38,113	45.4	43.4	42.4
Mid-Lothian	25,000	4,702	43.0	46.6	43.9	27,000	4,830	44.7	41.0	41.2	126,000	21,434	47.1	48.4	45.3
Moray	2,100	381	43.9	41.3	40.7	45,000	9,349	33.6	36.8	35.6	131,000	24,721	42.5	42.0	42.3
Nairn	..	..	..	..	†38.1	9,200	2,293	32.0	31.1	30.2	26,000	6,214	33.3	32.4	32.4
Orkney	..	..	..	..		17,000	3,589	37.7	21.1	29.4	159,000	33,098	38.5	16.0	28.3
Peebles	..	..	..	..	†35.0	420	93	36.2	32.1	31.0	29,000	6.063	38.6	36.2	33.8
Perth	33.000	7,418	35.9	37.4	38.6	16,000	3,809	34.2	35.7	35.5	385.000	68,957	44.7	44.6	44.9
Renfrew	8,700	1,595	43.5	41.4	41.9	290	62	37.0	35.0	36.8	54,000	10,197	42.5	42.3	43.7
Ross and Cromarty	2,100	393	42.7	41.6	42.9	34,000	8,011	34.2	30.6	31.7	161,000	31,502	40.8	37.1	39.0
Roxburgh	1,700	355	38.9	37.7	36.0	42,000	9,246	36.3	35.4	35.5	119,000	25,092	37.9	36.8	37.5
Selkirk	40	8	40.0	40.0	‡36.8	1,100	238	35.7	32.3	35.6	17,000	3,977	33.6	31.7	34.3
Shetland	..	..	..		.	2,300	636	29.0	26.9	24.7	20,000	6,446	24.4	21.9	23.0
Stirling	5,500	1,334	33.2	42.4	42.5	3,200	674	29.5	37.9	39.6	129,000	18,539	55.8	39.4	40.0
Sutherland	..	.	..	.	—	1.900	399	37.5	35.6	33.8	34,000	7,695	35.3	33.3	32.6
West Lothian	13,000	2,036	49.7	44.9	43.0	11,000	1,820	47.4	46.1	44.3	73,000	11,192	52.0	50.9	49.0
Wigtown	20	5	38.0	28.8	38.9	1,100	202	42.0	41.6	38.0	124,000	29,320	33.9	29.4	38.4
Total all Scotland	231,000	49,449	37.3	39.5	39.2	688,000	151,558	36.0	35.0	35.3	4,858,000	955,535	40.7	38.1	39.3

* Average of 6 years only. † Average of 7 years only. ‡ Average of 9 years only. § Crop failed.

TABLE No. 3.—TOTAL PRODUCE OF BEANS AND POTATOES, ACREAGE and YIELD per Acre in the Year 1924, compared with the YIELD for BEANS for the Year 1923 and for POTATOES for the Years 1923 and 1922, and the AVERAGE of the Ten Years, 1914-1923, in each COUNTY of SCOTLAND.

COUNTIES.	BEANS.					POTATOES.					
	Total Produce in 1924.	Acreage in 1924.	Yield per acre.		Average of the Ten Years, 1914-1923.	Total Produce in 1924.	Acreage in 1924.	Yield per acre.			Average of the Ten Years, 1914-1923.
			1924.	1923.				1924.	1923.	1922.	
	Qrs.	Acres.	Bush.	Bush.	Bush.	Tons.	Acres.	Tons.	Tons	Tons.	Tons
Aberdeen	10	11	7.1	10.4	*16.3	39,000	7,329	5 4	5.4	6.5	6 8
Argyll	60	15	33.9	33.9	29.4	16,000	3,015	5.2	3.7	5.0	5.5
Ayr	1,000	223	37.7	30.9	36.3	66,000	7,860	8.3	6.6	9.6	8.3
Banff	70	25	23.5	12.8	26.0	10,000	1,735	5.8	5.2	6.1	5.8
Berwick	660	177	29.7	29.4	30.1	14,000	2,597	5.5	5.6	7.1	6.1
Bute	60	15	33.9	33.9	29.0	6,000	1,018	5.9	5.2	7.3	6.5
Caithness	..	..	..	..	..	6,900	1,238	5.6	3.3	5.0	4.7
Clackmannan	910	229	31.8	40.8	45.1	2,400	410	5.8	7.3	7.3	6.8
Dumbarton	50	14	27.9	23.4	30.5	14,000	2,193	6 6	6.3	8.1	7.3
Dumfries	..	..	..	20.0	†25.9	22,000	3,199	7.0	5.9	8.6	7.1
East Lothian	290	63	36.8	32.3	33.2	56,000	7,678	7.3	7.4	7.8	6.9
Fife	1,600	353	35.3	39.7	38.2	85,000	16,643	5.1	7.1	8.5	6.6
Forfar	120	24	40.0	33.7	36.9	114,000	17,608	6.5	7.0	7.4	6.6
Inverness	..	..	..	20.0	‡29.2	16,000	5,302	3.1	1.6	4.1	3.5
Kincardine	60	24	19.5	30.2	32.0	23,000	4,307	5.3	5.6	8.0	6.2
Kinross	15	5	24.0	40.0	§39.0	6,200	1,148	5.4	7.1	8.1	7.0
Kirkcudbright	20	4	38 5	31.0	33.8	8,300	1,324	6.3	4.7	8.2	6.5
Lanark	..	..	.	..	*33.1	36,000	4,878	7.5	4.9	10.0	8.6
Mid-Lothian	10	2	40.0	..	†33.8	46,000	6,225	7.4	7.2	8.1	7.0
Moray	40	11	25.5	22.0	24.9	9,900	1,557	6.4	5.3	6.0	5.8
Nairn	..	..	..	.	—	1,000	265	3.8	3.9	5.6	4.8
Orkney	..	..	..	..	..	18,000	2,210	7.9	1.7	3.8	4.4
Peebles	5	1	40.0	..	..	2,000	281	7.0	5.6	6.6	6 6
Perth	3,100	793	31.6	25.4	34.7	90,000	17,047	5.3	7.3	7.6	6.7
Renfrew	330	66	40.0	42.0	40.8	24,000	2,803	8.7	7.8	8.2	7.8
Ross and Cromarty	..	..	..	16.0	*32.2	36,000	7,149	5.0	2 5	6.6	4.7
Roxburgh	220	58	30.5	28.3	29.1	6,900	1,158	6.0	6.2	7.6	6.3
Selkirk	..	..	.	..	—	820	154	5.3	5.5	7.6	6.4
Shetland	..	..	..	..	..	13,000	2,064	6.2	4.7	6.0	5.0
Stirling	6,400	1,470	34.9	28.9	39.2	23,000	2,957	7.9	6.5	7.6	7.0
Sutherland	..	..	..	..	†.	6,300	1,168	5.4	5.5	4.9	5.0
West Lothian	130	33	32.0	35.2	35.3	19,000	2,340	8.0	7.3	8.0	7.2
Wigtown	420	116	29.2	25.5	33.1	7,900	1,416	5.6	4.9	7.8	6.4
Total	15,600	3,732	33.5	30.3	35.9	845,000	138,281	6.1	6.0	7.6	6.6

* Average of 9 years only. † Average of 8 years only. ‡ Average of 6 years only. § Average of 7 years only.

Table No. 4.—Total Produce of Turnips (including Swedes) and Mangolds, Acreage and Yield per Acre in the Year 1924, compared with the Yield for the Years 1923 and 1922, and the Average of the Ten Years, 1914-1923, in each County of Scotland.

Counties.	Turnips and Swedes.						Mangolds.					
	Total Produce in 1924.	Acreage in 1924.	Yield per Acre.			Average of the Ten Years, 1914-1923.	Total Produce in 1924.	Acreage in 1924.	Yield per Acre.			Average of the Ten Years, 1914-1923.
			1924.	1923.	1922.				1924.	1923.	1922.	
	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.
Aberdeen	1,225,000	81,585	15.0	14.6	15.2	15.7	6	1	5.5	9.7	8.4	*18.1
Argyll	65,000	5,146	12.6	12.3	14.9	16.0	70	9	7.4	7.5	11.1	13.2
Ayr	147,000	7,624	19.2	15.9	18.6	19.8	4,700	268	17.7	15.6	18.2	20.7
Banff	280,000	20,032	14.0	14.7	17.1	16.2	..	..	..	..	..	†19.8
Berwick	411,000	21,158	19.4	21.1	20.9	18.7	2,200	128	17.0	19.6	17.0	16.8
Bute	19,000	1,340	14.0	14.1	16.0	16.1	70	5	18.5	13.0	16.4	15.4
Caithness	235,000	11,329	20.8	15.3	20.5	17.5	..	..	..	..	..	..
Clackmannan	12,000	812	14.4	19.8	18.6	16.4	..	..	..	..	..	‡11.6
Dumbarton	23,000	1,458	16.1	18.3	18.5	20.0	140	8	17.6	19.3	20.1	21.6
Dumfries	275,000	15,507	17.8	17.6	17.6	17.4	2,200	147	14.9	14.9	15.4	18.2
East Lothian	293,000	12,913	22.7	16.3	21.1	17.7	6,800	332	20.4	17.9	19.8	19.3
Fife	370,000	21,786	17.0	17.0	19.1	17.9	410	28	14.7	14.2	16.5	14.0
Forfar	547,000	30,584	17.9	19.8	18.6	18.9	140	11	12.6	16.4	15.7	18.4
Inverness	122,000	8,995	13.6	10.9	14.7	13.8	..	..	..	..	16.4	§12.0
Kincardine	256,000	15,282	16.7	18.2	15.8	15.0	..	..	..	..	..	—
Kinross	41,000	2,383	17.3	18.0	18.9	17.4	¶—	1	¶—	..	..	—
Kirkcudbright	136,000	10,072	13.5	14.1	14.8	16.0	820	59	13.8	12.9	16.6	18.2
Lanark	196,000	9,611	20.4	19.0	20.5	19.9	210	15	14.0	18.0	12.0	10.5
Mid-Lothian	187,000	9,747	19.2	17.1	19.0	17.1	860	42	20.4	16.3	23.1	20.8
Moray	242,000	13,683	17.7	16.1	16.4	16.1	150	8	19.2	17.5	¶—	16.6
Nairn	50,000	3,755	13.4	11.8	14.4	13.7	..	..	..	..	15.0	*12.9
Orkney	162,000	13,616	11.9	8.7	10.3	9.2	..	..	..	..	..	..
Peebles	56,000	3,088	18.3	18.1	18.5	18.2	..	..	..	15.0	20.0	—
Perth	393,000	24,747	15.9	19.6	16.4	17.3	80	10	8.4	9.9	15.2	17.5
Renfrew	30,000	2,083	14.4	26.6	16.5	19.1	120	9	13.8	24.5	17.8	20.1
Ross and Cromarty	224,000	13,993	16.0	14.0	16.4	15.9	100	6	16.0	13.8	17.0	16.4
Roxburgh	325,000	17,482	18.6	16.6	17.4	14.6	390	83	15.0	10.1	13.1	16.0
Selkirk	41,000	2,125	19.3	18.8	15.7	16.1	..	..	..	..	18.0	—
Shetland	13,000	1,014	13.0	12.3	12.0	11.5	..	..	..	..	..	..
Stirling	76,000	3,911	19.3	17.6	21.6	24.5	60	3	20.3	16.5	18.3	23.6
Sutherland	39,000	2,796	14.1	14.1	10.8	13.8	..	..	..	..	..	—
West Lothian	69,000	3,391	20.4	18.3	21.6	18.9	260	12	21.5	24.2	22.9	24.4
Wigtown	192,000	12,695	15.1	12.2	16.4	15.6	2,900	181	16.1	11.2	16.2	20.4
Total	6,752,000	405,693	16.6	16.0	17.0	16.5	22,700	1,316	17.2	15.4	17.2	19.0

* Average of 7 years only. † Average of 6 years only. ‡ Average of 8 years only. § Average of 9 years only. ¶ Crop failed.

TABLE No. 5.—TOTAL PRODUCE OF HAY from Rye-grass and other Rotation Grasses and Clover, also Total from Permanent Grass, ACREAGE, and YIELD per Acre in the Year 1924, compared with the YIELD for the Years 1923 and 1922, and the AVERAGE of the Ten Years, 1914-1923, in each COUNTY of SCOTLAND.

COUNTIES.	FROM CLOVER AND GRASSES.						FROM PERMANENT GRASS.					
	Total Produce in 1924.	Acreage in 1924.	Yield per Acre.			Average of the Ten Years, 1914-1923.	Total Produce in 1924.	Acreage in 1924.	Yield per Acre.			Average of the Ten Years, 1914-1923.
			1924.	1923.	1922				1924.	1923.	1922.	
	Tons.	Acres.	Cwt.	Cwt.	Cwt.	Cwt.	Tons.	Acres.	Cwt.	Cwt.	Cwt.	Cwt.
Aberdeen	85,000	52,939	32.0	28.1	29.6	28.5	1,070	834	25.6	24.4	26.8	23.2
Argyll	18,000	11,926	29.8	29.5	28.8	28.6	21,840	15,066	28.5	26.5	30.5	29.5
Ayr	47,000	28,226	33.5	33.3	32.5	31.5	46,000	22,653	41.0	39.8	40.1	40.5
Banff	16,000	10,218	32.1	29.0	31.4	28.8	310	308	20.2	19.8	25.8	20.4
Berwick	23,000	11,399	40.8	36.9	29.8	29.7	2,240	1,445	30.5	26.9	23.0	22.5
Bute	4,200	2,448	34.6	37.1	37.8	37.1	540	320	33.3	33.0	34.0	33.1
Caithness	7,600	10,076	15.1	18.9	20.4	18.6	340	770	8.9	9.3	8.4	8.6
Clackmannan	3,500	1,420	50.0	36.9	31.6	38.2	2,680	917	58.3	33.7	40.6	43.3
Dumbarton	9,700	5,774	33.4	35.2	36.9	33.1	3,600	2,491	29.2	29.3	34.1	33.8
Dumfries	33,000	20,432	32.2	31.3	29.6	27.1	28,100	19,103	30.1	29.3	27.8	26.6
East Lothian	24,000	9,169	51.3	44.9	47.3	43.1	2,050	1,127	36.4	36.4	43.3	38.8
Fife	50,000	27,016	36.7	38.4	40.4	37.8	4,700	2,781	33.9	29.9	28.1	32.0
Forfar	45,000	22,962	39.6	34.0	32.1	34.6	1,720	1,072	32.0	26.2	26.4	27.5
Inverness	13,000	11,530	23.0	20.2	23.0	21.7	8,940	8,439	21.2	18.8	20.9	19.9
Kincardine	29,000	13,499	43.3	38.9	35.2	30.6	240	113	43.0	32.2	32.2	26.1
Kinross	7,600	3,197	47.4	26.6	30.6	32.3	1,320	607	43.6	35.5	30.5	38.9
Kirkcudbright	15,000	10,460	27.9	27.4	26.6	25.0	15,300	12,593	25.1	23.4	25.2	24.6
Lanark	59,000	32,298	36.7	37.1	34.7	32.6	23,300	13,339	34.7	33.4	33.6	30.7
Mid-Lothian	28,000	11,554	47.6	43.6	43.9	42.5	3,400	1,899	35.3	32.5	37.0	34.7
Moray	7,700	6,099	25.4	21.0	25.9	26.3	270	286	18.6	18.7	20.4	23.0
Nairn	1,800	1,710	20.7	18.8	21.2	20.3	40	48	16.7	15.2	20.6	16.5
Orkney	8,600	8,508	20.1	8.7	8.2	16.2	410	583	13.9	1.1	1.7	5.9
Peebles	4,700	2,552	36.6	34.2	34.7	30.1	2,140	1,238	34.9	30.0	34.7	29.0
Perth	62,000	34,753	35.6	32.1	31.6	31.4	17,400	11,085	30.8	29.8	28.5	28.1
Renfrew	19,000	9,320	41.6	36.5	37.0	33.3	16,100	7,190	44.1	41.7	39.6	41.2
Ross and Cromarty	16,000	13,054	24.0	21.6	23.6	22.0	2,860	2,779	16.7	15.2	17.8	16.7
Roxburgh	17,000	9,375	36.4	35.2	29.6	30.4	10,490	6,775	30.9	29.5	28.2	27.5
Selkirk	2,800	1,300	42.9	40.6	27.3	30.5	4,050	1,952	41.9	40.4	31.9	27.8
Shetland	1,800	1,366	26.0	25.9	26.0	24.9	1,500	1,727	17.4	17.5	18.0	20.6
Stirling	25,000	11,528	44.2	29.5	29.9	33.8	18,200	7,074	51.1	39.3	40.2	38.7
Sutherland	4,900	4,588	21.5	21.3	19.2	18.7	1,200	1,555	15.9	17.0	14.6	14.4
West Lothian	17,000	7,168	47.5	37.7	45.2	40.6	2,900	1,425	42.0	36.3	42.9	38.3
Wigtown	14,000	7,518	36.4	28.1	29.1	27.2	8,900	5,171	34.3	26.9	28.6	29.5
Total	720,000	415,322	34.7	31.7	31.5	30.7	254,000	154,765	32.8	30.5	30.9	30.8

TABLE No. 6.—HAY from Permanent Grass:—TOTAL PRODUCE, ACREAGE, and YIELD PER ACRE, in 1924, in each COUNTY OF SCOTLAND, distinguishing HAY from TIMOTHY MEADOWS and HAY from OTHER MEADOWS.

COUNTIES	TIMOTHY MEADOWS.			OTHER MEADOWS.		
	Total Produce in 1924.	Acreage in 1924.	Yield per Acre in 1924.	Total Produce in 1924.	Acreage in 1924.	Yield per Acre in 1924.
	Tons.	Acres	Cwt.	Tons.	Acres.	Cwt
Aberdeen	200	110	35·6	870	724	24·1
Argyll	840	459	36·5	21,000	14,607	28·2
Ayr	28,000	12,210	46·8	18,000	10,443	34·3
Banff	..	..	..	310	308	20·2
Berwick	240	157	30·0	2,000	1,288	30·6
Bute	40	21	36·0	500	299	33·1
Caithness	..	.	.	340	770	8·9
Clackmannan	2,600	866	59·8	80	51	33·3
Dumbarton	2,000	1,014	40·0	1,600	1,477	21·9
Dumfries	4,100	2,526	32·3	24,000	16,577	29·7
East Lothian	250	97	51·5	1,800	1,030	35·0
Fife	3,100	1,418	43·8	1,600	1,363	23·7
Forfar	770	378	40·6	950	694	27·3
Inverness	40	32	24·5	8,900	8,407	21·2
Kincardine	180	64	56·6	60	49	25·1
Kinross	520	205	50·6	800	402	40·0
Kirkcudbright	4,300	2,359	36·2	11,000	10,234	22·5
Lanark	16,000	7,707	40·9	7,300	5,632	26·1
Midlothian	1,500	707	41·6	1,900	1,192	31·5
Moray	10	10	19·0	260	276	18·6
Nairn	..	.	..	40	48	16·7
Orkney	..	..		410	583	13·9
Peebles	840	434	38·8	1,300	804	32·8
Perth	6,400	2,988	43·1	11,000	8,097	26·2
Renfrew	11,000	4,495	47·9	5,100	2,695	37·8
Ross and Cromarty	60	39	28·2	2,300	2,740	16·5
Roxburgh	490	245	40·4	10,000	6,530	30·6
Selkirk	350	147	47·8	3,700	1,805	41·5
Shetland	.	..	..	1,500	1,727	17·4
Stirling	15,000	4,903	60·8	3,200	2,171	29·4
Sutherland		.	..	1,200	1,555	15·9
West Lothian	1,900	780	49·8	1,000	645	32·5
Wigtown	1,300	691	37·1	7,600	4,480	33·9
Total	102,000	45,062	45·3	152,000	109,703	27·7

TABLE No. 7.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN EACH COUNTY OF SCOTLAND AS RETURNED ON JUNE 4, 1925.

COUNTIES.	HORSES (including Ponies).					CATTLE.							SHEEP.				PIGS.		
	Used solely for Agriculture, &c.*	Stallions.†	Unbroken Horses.		Other Horses.	Cows in Milk.	Cows in Calf, but not in Milk.	Heifers in Calf.	Bulls used for Service.	Other Cattle.			Ewes kept for Breeding	Rams to be used for Service.	1 Year Old and above.	Under 1 Year.	Sows kept for Breeding.	Boars used for Service.	Other Pigs.
			1 Year & above.	Under 1 Year.						2 Years & above.	1 Year & under 2 Years.	Under 1 Year.							
1. Aberdeen	20,721	47	3,075	1,046	2,477	36,720	3,033	2,612	1,642	45,340	49,228	35,534	97,288	2,752	36,810	117,945	1,811	187	13,823
2. Argyll	4,193	19	649	168	538	16,150	2,707	1,945	886	9,136	10,906	11,247	351,377	10,719	114,734	239,268	471	64	3,624
3. Ayr	6,673	36	1,089	337	1,329	42,529	7,211	9,090	2,346	9,703	17,362	18,521	164,994	4,283	45,974	149,587	941	98	10,198
4. Banff	6,112	15	882	245	835	10 622	968	650	464	7,322	12,671	10,940	29,378	871	11,341	32,426	540	68	3,506
5. Berwick	3,754	12	441	109	524	2,877	452	561	245	8,561	8,306	2,939	131,578	3,249	42,165	183,269	521	83	3,456
6. Bute	888	1	188	35	138	2,754	395	396	167	1,289	1,934	1,860	18,195	486	6,187	14,344	46	8	616
7. Caithness	4,092	7	508	100	455	5,734	628	312	162	2,214	5,445	5,314	64,140	1,667	18,732	67,588	185	23	1,207
8. Clackmannan	446	1	121	18	92	1,028	156	110	51	951	640	462	5,857	253	996	5,726	138	8	849
9. Dumbarton	1,259	11	253	59	191	5,423	1,265	708	303	1,790	1,976	1,791	31,376	979	9,586	25,001	93	11	984
10. Dumfries	4,960	12	1,091	239	987	18,608	2,269	6,148	1,193	10,777	15,204	14,329	250,131	6,067	67,797	246,978	1,055	94	8,348
11. East Lothian	2,953	2	270	54	228	2,203	297	315	189	6,922	8,791	1,539	53,776	1,594	27,311	68,800	534	40	3,357
12. Fife	6,987	18	1,314	232	1,166	9,627	1,360	1,468	599	14,565	11,123	6,656	45,119	1,453	20,817	57,911	1,013	189	6,421
13. Forfar	7,616	6	741	135	880	10,177	1,100	777	433	17,867	11,306	7,258	74,535	2,615	27,102	84,995	750	88	5,496
14. Inverness	6,237	34	890	432	502	15,584	3,427	1,191	574	4,966	8,803	11,485	236,612	7,395	88,609	175,271	236	41	1,618
15. Kincardine	3,734	4	395	95	547	5,617	502	417	244	7.184	7,306	5,289	25,106	705	6,347	29,043	387	41	2,467
16. Kinross	781	3	228	49	77	1,180	194	262	84	1,464	2,300	954	13,266	550	4,043	14,535	88	10	668
17. Kirkcudbright	3,414	23	826	207	591	17,097	1,147	5,817	1,002	9,880	13,210	9,957	162,411	4,404	53,914	162,870	1,043	113	11,947
18. Lanark	5,770	49	1,029	325	1,012	28,245	6,623	4,852	1,558	8,864	10,411	10,235	103,951	3,133	30,814	100,636	695	99	6,006
19. Mid-Lothian	2,986	6	371	75	567	8,025	920	548	207	3,460	2,978	1,726	67,757	1,669	82,036	77,527	1,524	154	12,343
20. Moray	3,499	20	565	145	400	5,633	521	351	261	4,846	7,607	5,086	21,103	617	9,064	21,157	273	36	2,642
21. Nairn	923	1	217	54	209	1,872	171	141	104	670	1,733	1,951	5,681	272	4,147	5,461	90	10	500
22. Orkney	4,995	11	498	195	843	7,940	1,121	724	229	4,365	8,557	7,505	13,813	391	3,669	17,019	204	20	1,501
23. Peebles	762	6	152	41	102	1,712	228	519	146	1,302	2,036	1,412	91,845	2,074	21,026	90,865	47	9	444
24. Perth	9,394	50	1,434	362	1,045	14,362	1,501	1,715	889	15,222	19,648	14,377	279,870	8,570	97,911	241,948	893	114	7,201
25. Renfrew	2,019	17	317	93	408	11,532	3,291	1,922	577	2,226	3,211	2,863	17,193	465	5,643	15,413	275	29	2,415
26. Ross & Cromarty	5,424	11	677	126	465	13,892	2,012	1,300	394	5,469	8,680	8,688	125,356	3,700	56,824	105,366	326	40	2,789
27. Roxburgh	3,128	5	845	75	736	4,232	635	904	324	8,043	6,551	3,600	219,873	5,311	76,501	262,670	427	55	3,094
28. Selkirk	488	1	73	4	80	1,012	117	167	58	629	1,087	892	84,855	1,846	20,437	84,359	70	7	448
29. Shetland	2,214	39	219	143	2,090	4,506	847	369	100	1,303	2,030	2,295	68,218	2,558	26,704	49,064	5	1	254
30. Stirling	3,079	16	750	156	510	8,883	2,084	1,728	568	8,160	7,142	4,633	55,727	1,539	14,861	48,558	259	29	2,236
31. Sutherland	1,866	3	164	27	182	3,766	729	314	78	871	1,918	2,090	84,266	2,220	43,707	73,799	54	10	496
32. West Lothian	1,573	9	435	109	274	4,095	804	680	240	2,463	2,018	1,454	6,710	204	5,190	8,631	202	25	1,487
33. Wigtown	3,712	45	1,143	324	604	24,689	1,082	3,274	1,043	8,248	9,782	9,217	55,030	1,744	14,708	53,846	965	121	13,798
Total	136,652	540	21,345	5,814	21,082	348,326	49,798	52,227	17,369	236,072	276,900	224,099	3,055,867	86,355	1,045,707	2,930,871	16,161	1,875	136,184

* Including Mares kept for breeding.

† Above two years old used, or intended to be used, for service.

TABLE No. 8.—QUANTITY AND VALUE OF CORN, &c., imported into the United Kingdom in the undermentioned Years.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1923.	1924.	1925.	1923.	1924.	1925.
Wheat from—	Cwt.	Cwt.	Cwt.	£	£	£
United States . .	31,461,744	30,320,517	27,205,333	16,846,669	18,165,714	19,216,492
Argentine Republic .	21,026,044	24,021,841	11,960,128	11,004,827	18,196,831	8,582,526
British East Indies .	12,522,810	9,815,953	7,324,150	6,739,594	6,101,012	5,268,819
Australia . . .	4,654,220	10,871,056	16,305,958	2,597,088	6,251,291	11,667,051
Canada . . .	28,486,785	38,769,186	29,818,689	15,199,549	28,316,420	20,517,731
Other countries . .	2,315,320	3,622,019	5,119,087	1,180,146	1,972,692	3,203,951
Total . .	100,466,923	117,420,522	97,783,345	53,567,868	69,003,960	68,456,570
Wheat, meal, and flour, from—						
France . .	108,353	59,421	58,580	64,464	46,270	48,152
United States . .	3,838,716	3,607,992	2,759,740	2,755,657	2,830,891	2,602,488
Argentine Republic .	265,160	305,886	409,758	124,678	160,949	245,483
Australia . . .	1,785,369	1,628,906	1,487,474	1,215,869	1,165,248	1,349,926
Canada . .	5,580,511	5.245,845	4,220,134	3,980,406	4,003,613	3,890,150
Other countries . .	140,356	198,303	186,178	66,882	118,363	127,327
Total . .	11,718,465	11,045,853	9,121,864	8,207,956	8,325,334	8,268,526
Barley	18,129,280	21,650,359	15,873,695	7,830,004	12,003,314	8,573,428
Oats	9,759,055	10,315.735	8,502,454	4,143,239	4,316,661	3,763,479
Peas, not fresh . .	1,976,956	1,780,348	1,422,074	1,848,649	1,601,969	1,447,726
Beans, not fresh . .	1,393,979	1,618,087	1,063,635	677,929	987,369	797,028
Maize . . .	34,489,643	37,667,010	27,648,178	14,251,849	16,994,379	13,108,352
Maize products . .	1,525,283	1,734,614	2,888,731	688,297	919,943	1,411,742
Oat products . . .	853,293	888,570	770,493	803,187	878,447	797,223
Rice—						
From United States .	441,714	290,982	168,438	502,057	387,228	277,336
From Brit. East Indies	1,384,232	1,914,339	1,888,337	878,952	1,346,466	1,318,522
From other countries	1,382,400	1,090,061	1,202,480	1,018,901	1,062,020	1,146,398
Other kinds of grain .	985,780	1,000,915	731,992	451,818	484,354	449,655
Other products . .	420,015	565,386	494,267	716,289	854,271	838,691
Malt	23,125	34,888	45,372	26,508	38,438	54,594
Farinaceous substances	1,047,269	1,312,705	1,250,063	1,031,751	1,352,935	1.178,934
Total of corn, &c. .	73,815,024	81,869,999	63,950,209	34,869,375	43,317,794	35,158,103

TABLE No. 9.—RETURN OF THE AVERAGE PRICES OF WOOL in the Years 1924 and 1925.

Years.	Australian.	South African.	English Fleeces.
	Per lb. s. d.	Per lb. s. d	Per lb. s. d. s. d.
1924	2 3¾	1 6½	1 10 to 2 9¾
1925	2 3¾	1 11	1 4 ,, 1 10¼

TABLE No. 10.—QUANTITIES AND VALUES OF CORN, MEAT, FOOD PRODUCTS, AND ARTICLES AFFECTING AGRICULTURE, imported into the United Kingdom in the Year 1925, with the Corresponding Figures for 1923 and 1924.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1923.	**1924.**	**1925.**	**1923.**	**1924.**	**1925.**
ANIMALS, LIVING:—	No.	No.	No.	£	£	£
Cattle	584,395	1,010,198	800,144	11,263,005	19,114,704	15,748,246
Sheep and lambs . . .	372,455	589,107	400,587	1,068,866	1,764,505	1,208,888
Pigs	279,005	284,536	97,695	1,696,930	1,170,160	618,555
Total value .	1,235,855	1,833,841	1,298,426	14,028,801	22,049,369	17,575,689
GRAIN, FLOUR, &c.:—	Cwt.	Cwt.	Cwt.	£	£	£
Wheat	100,466,923	117,420,522	97,788,345	53,567,868	69,003,960	68,456,570
Wheat meal and flour .	11,718,465	11,045,853	9,121,864	8,207,956	8,325,334	8,263,526
Barley	16,129,280	21,656,359	15,873,695	7,830,004	12,093,314	8,573,428
Oats	9,759,055	10,315,735	8,502,454	4,148,239	4,316,661	3,768,479
Peas, not fresh . . .	1,976,956	1,780,348	1,422,074	1,848,649	1,601,969	1,447,726
Beans, not fresh . . .	1,393,979	1,618,087	1,063,635	677,929	987,369	797,028
Maize or Indian corn . .	34,489,643	37,667,010	27,648,178	14,251,849	16,994,379	13,103,352
Maize products . . .	1,525,283	1,734,614	2,888,731	688,297	919,943	1,411,742
Oat products . . .	853,293	888,570	770,493	803,187	878,447	797,225
All other products . .	420,015	565,386	494,207	716,239	854,271	838,691
Malt	26,125	34,888	45,372	26,503	38,438	54,594
Rice—						
From United States . .	441,714	290,962	168,438	502,057	387,228	277,336
From British East Indies	1,384,232	1,914,339	1,888,337	878,952	1,346,466	1,318,522
From other countries .	1,382,400	1,090,061	1,202,480	1,018,901	1,062,020	1,146,398
Other kinds of grain . .	985,780	1,000,915	731,992	451,818	484,354	449 655
Farinaceous substances .	1,047,269	1,312,705	1,250,063	1,031,751	1,352,985	1,178,934
Total value .	186,006,412	210,336,374	170,805,418	96,615,199	120,647,088	111,878,199
MEAT:—	Cwt.	Cwt.	Cwt.	£	£	£
Beef, salted	25,326	19,877	18,390	101,599	80,538	71,925
***Beef**	12,769,764	12,549,495	12,419,614	27,544,621	27,592,046	30,910,889
***Mutton**	5,864,766	5,097,027	5,485,230	22,773,522	19,714,751	22,455,097
Bacon	7,793,150	7,873,377	7,486,620	38,178,535	37,388,638	42,239,817
Hams	1,747,091	1,636,022	1,517,027	8,856,272	7,670,981	8,543,466
Pork, salted (not bacon or hams)	72,498	37,665	36,497	175,435	93,179	104,497
***Pork**	1,016,599	1,008,887	1,238,240	4,714,472	4,699,412	6,143,708
Tinned, canned extracts, including tongue	1,119,678	1,155,227	1,512,726	4,680,866	4,675,854	6,868,137
All other kinds . . .	455,808	545,518	527,552	1,928,194	2,021,232	1,746,865
***Rabbits (dead)** . . .	253,525	241,132	290,316	653,964	634,750	814,757
Total of dead meat .	31,118,205	30,164,227	30,532,212	109,104,480	104,571,381	119,899,158
DAIRY PRODUCE:—	Cwt.	Cwt.	Cwt.	£	£	£
Butter	5,095,511	5,287,244	5,854,501	44,234,584	49,647,492	53,216,141
Margarine	1,238,170	1,315,344	1,387,095	4,459,811	4,708,277	4,879,587
Cheese	2,838,546	2,887,513	3,102,153	15,260,707	13,552,406	15,711,615
Total .	9,172,227	9,490,101	10,343,749	68,955,052	67,908,175	73,807,293

* Fresh, Chilled, and Frozen.

TABLE No. 10—*Continued.*

	Quantities.			Values.		
	1923.	1924.	1925.	1923.	1924.	1925.
Poultry (alive or dead)	..	..	..	£ 2,189,410	£ 1,904,483	£ 2,442,208
Game (alive or dead)	..	..	..	83,772	96,400	123,251
Eggs in Shell	Gt. Hunds. 20,045,943	Gt. Hunds. 20,279,499	Gt. Hunds. 21,974,042	13,816,896	15,475,588	16,660,510
Eggs not in Shell	Cwt. 529,660	Cwt. 529,656	Cwt. 656,226	3,098,909	3,131,622	3,523,069
Total value	..	..	..	19,188,987	20,608,093	22,749,038
Fruit, Vegetables, &c.:—						
Apples	Cwt. 6,473,897	Cwt. 7,232,616	Cwt. 6,008,786	£ 7,398,331	£ 8,870,974	£ 7,567,091
Cherries	227,885	242,694	138,515	519,530	494,705	342,934
Plums	830,583	574,477	507,583	1,564,897	914,285	957,501
Pears	852,426	1,324,064	589,537	1,567,335	1,862,163	1,267,224
Grapes	708,026	820,312	980,789	1,698,445	1,681,858	2,178,281
Oranges	7,626,271	7,519,608	7,728,701	7,056,014	7,108,450	8,097,998
Lemons, Limes, &c.	938,585	1,208,688	1,298,843	839,366	949,812	1,094,498
Unenumerated	787,320	831,159	886,723	1,471,489	1,426,115	1,598,281
Bananas	Bunches. 11,857,169	Bunches. 11,807,940	Bunches. 12,080,238	5,503,873	5,500,628	5,860,018
Onions	Bushels. 9,897,548	Bushels. 9,510,976	Bushels. 10,474,198	1,989,602	2,102,387	2,430,461
Potatoes	Cwt. 4,865,845	Cwt. 9,009,872	Cwt. 9,835,563	2,957,948	5,433,037	4,722,490
Tomatoes	2,209,287	2,437,934	2,483,848	3,713,859	3,772,165	4,136,870
Vegetables, unenumerated (raw)	..	..	..	1,070,797	1,045,519	1,227,422
Hops	13,442	95,010	73,395	130,511	997,895	564,852
Total value	..	..	..	37,481,997	41,659,993	42,045,366
Other Articles:—						
Lard	Tons. 121,870	Tons. 124,450	Tons. 114,378	£ 7,957,729	£ 8,772,754	£ 9,557,078
Wool—sheep and lambs'	Centals. 7,391,674	Centals. 7,603,482	Centals. 7,290,258	46,676,855	69,901,671	71,978,018
Wood and timber—						
Hewn (pit-props or pit-wood)	Loads. 3,675,120	Loads. 3,004,269	Loads. 2,503,142	7,679,764	5,911,646	4,595,327
Sawn or soft	4,678,596	5,136,893	4,995,395	26,651,011	27,457,201	24,303,900
Staves	84,299	128,735	115,964	564,088	1,117,374	917,609
Oilseed-cake (not sweetened)	Tons. 322,015	Tons. 372,600	Tons. 467,512	2,788,552	3,472,782	4,428,418
Seeds—						
Clover and grass	Cwt. 303,663	Cwt. 295,488	Cwt. 272,681	926,356	905,437	713,493
Cotton	Tons. 548,284	Tons. 558,289	Tons. 605,664	5,745,392	6,426,404	6,492,791
Flax or linseed	381,506	445,101	340,956	7,548,368	8,782,089	7,286,304
Rape	60,897	68,558	36,800	981,394	1,216,717	759,021
Soya beans	113,062	111,474	161.907	1,271,903	1,413,768	2,054,504
Bones (whether burnt or not)	8,222	9,120	8,539	62,228	68,830	65,621
Guano	15,122	16,122	10,500	99,694	157,268	65,147
Basic slag	91,120	67,804	25,059	266,079	177,022	65,130
Phosphate of lime and rock phosphate	330,151	342,719	333,179	613,539	499,068	452,517
Nitrate of soda (cubic nitre)	Cwt. 1,452,478	Cwt. 1,644,975	Cwt. 1,626,483	925,461	1,073,205	1,020,854
Cotton, raw of 100 lb.	Centals. 12,918,776	Centals. 15,776,603	Centals. 18,912,052	91,188,745	119,486,766	123.510,553
Hemp	Tons. 93,291	Tons. 108,798	Tons. 100,412	3,257,914	4,417,760	4,709,020
Flax	33,691	49,622	34,324	3,008,349	5,311,054	4,174,895
Hides untanned—						
Dry	Cwt. 605,924	Cwt. 647,446	Cwt. 667,355	2,325,682	2,604,991	3,056,526
Wet	791,218	1,158,264	1,185,642	2,855,582	4,055,303	4,471,301
Petroleum	Gallons. 990,491,125	Gallons. 1,106,547,621	Gallons. 1,045,258,046	29,692,139	33,684,405	30,669,647

TABLE No. 11.—QUANTITY AND VALUE OF DEAD MEAT imported into the United Kingdom in the undermentioned Years.

	Quantities.			Values.		
	1923.	1924.	1925.	1923.	1924.	1925.
BACON, from—	Cwt.	Cwt.	Cwt.	£	£	£
Denmark . . .	3,530,561	3,987,160	3,738,834	19,686,164	20,314,125	22,163,854
United States . .	2,828,662	1,883,824	1,490,894	11,509,263	7,164,916	7,472,807
Irish Free State .	308,269	595,409	461,548	1,661,481	3,157,375	2,924,601
Canada . . .	834,284	1,191,044	1,266,861	3,846,568	5,484,194	6,843,787
Other countries . .	291,374	265,940	528,983	1,525,059	1,268,028	2,835,268
Total . .	7,793,150	7,873,377	7,486,620	38,178,535	37,388,688	42,239,817
BEEF (salted), from—						
United States . .	21,007	15,464	13,618	93,704	69,574	58,795
Other countries . .	4,319	4,413	4,772	7,895	10,964	13,130
Total . .	25,326	19,877	18,390	101,599	80,538	71,925
BEEF (fresh and refrigerated)—						
Denmark . . .	54,893	18,506	30,680	293,809	96,067	158,606
United States . .	78,949	80,091	94,611	255,477	254,800	288,302
Uruguay . . .	1,134,379	997,409	994,835	2,373,422	2,030,934	2,398,736
Argentine Republic .	9,686,852	9,971,628	9,052,656	21,213,656	22,270,676	23,273,686
Australia . . .	849,989	753,787	1,374,338	1,618,265	1,495,361	2,942,027
New Zealand . .	771,303	564,866	520,679	1,391,819	1,055,764	1,052,770
Other countries . .	193,399	163,213	352,315	403,173	388,944	801,762
Total . .	12,769,764	12,549,495	12,419,614	27,544,621	27,592,046	30,910,889
HAMS, from—						
United States . .	1,620,312	1,475,228	1,309,687	7,744,022	6,880,345	7,324,958
Canada . . .	114,308	145,929	188,499	543,292	692,852	1,088,227
Other countries . .	12,471	14,865	18,811	70,958	97,784	130,286
Total . .	1,747,091	1,636,022	1,517,027	8,358,272	7,670,981	8,543,466
TINNED, CANNED EXTRACTS (including TONGUE)—						
Beef	1,019,544	1,041,376	1,323,673	4,319,153	4,302,790	5,843,861
Mutton . . .	30,891	20,293	26,950	140,768	80,080	91,543
,, Other descriptions	69,243	93,558	85,415	220,945	292,984	268,191
Total . .	1,119,678	1,155,227	1,436,038	4,680,866	4,675,854	6,203,595
ALL OTHER KINDS—						
Tinned or Canned .	15,631	9,673	3,274	109,751	33,978	21,396
Salted . . .	5,890	791	1,702	16,438	2,126	4,573
Other descriptions .	434,287	535,054	599,264	1,797,005	1,985,128	2,384,938
Total . .	455,808	545,518	604,240	1,923,194	2,021,232	2,411,407
MUTTON (fresh and refrigerated)—						
Netherlands . .	110,097	118,393	120,137	538,186	604,475	610,729
Uruguay . . .	208,959	231,376	118,520	619,774	696,089	402,786
Argentine Republic .	1,744,695	1,581,054	1,841,553	5,888,149	5,341,957	6,755,377
Australia . . .	1,271,856	452,476	527,486	4,717,428	1,961,465	2,405,786
New Zealand . .	2,286,673	2,403,233	2,502,501	10,249,774	10,103,338	11,039,729
Other countries . .	242,486	310,495	375,033	760,218	1,007,477	1,240,691
Total . .	5,864,766	5,097,027	5,485,230	22,773,522	19,714,751	22,455,097
PORK (salted, not Bacon or Hams), from—						
Denmark . . .	42,023	18,461	16,313	71,969	27,352	23,586
United States . .	22,034	16,316	15,732	74,083	56,038	64,348
Other countries . .	8,441	2,888	4,452	29,383	9,789	16,563
Total . .	72,498	37,665	36,497	175,435	93,179	104,497
PORK (fresh and refrigerated)—						
Netherlands . .	342,385	534,748	819,843	1,801,458	2,639,77	4,122,182
Irish Free State .	282,522	248,605	179,731	996,482	1,065,452	932,988
China	7,275	.	19,585	25,929	..	75,085
Argentine Republic .	28,383	1,445	6,689	102,173	4,916	32,294
United States . .	291,589	169,880	129,657	1,304,025	734,275	628,629
Other countries . .	114,495	54,214	82,735	484,410	254,999	352,630
Total . .	1,016,599	1,008,887	1,238,240	4,714,472	4,699,412	6,143,708
RABBITS (dead), from—						
Belgium . . .	14,956	18,761	25,713	85,772	81,547	119,656
Australia . . .	196,964	133,798	188,892	451,761	299,676	462,788
New Zealand . .	9,507	8,189	11,119	20,628	18,245	33,205
Other countries .	32,098	80,384	64,592	95,803	285,282	199,108
Total . .	253,525	241,132	290,316	653,964	684,750	814,757
Total of dead meat	31,118,205	30,164,227	30,532,212	109,104,480	104,571,381	119,899,158

TABLE No. 12.—QUANTITIES AND VALUES OF BUTTER, MARGARINE, CHEESE, AND EGGS imported into the United Kingdom in each Year from 1923 to 1925 inclusive.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1923.	**1924.**	**1925.**	**1923.**	**1924.**	**1925.**
BUTTER from—	Cwt.	Cwt	Cwt.	£	£	£
Russia . .	30,163	282,585	292,226	237,531	2,338,450	2,448,095
Finland . .	116,076	134,919	169,696	1,009,292	1,299,898	1,611,065
Sweden . .	39,202	57,654	81,436	377,790	587,844	813,823
Denmark .	1,837,941	1,734,134	1,658,052	16,757,198	18,118,126	17,110,534
Netherlands .	174,493	92,114	76,034	1,375,635	840,107	719,203
France . .	94,389	13,739	30,996	591,170	121,679	291,432
United States .	10,578	35,015	11,966	98,797	342,462	110,973
Argentine Republic . .	491,256	538,504	481,503	3,948,962	4,423,262	4,030,324
Irish Free State	492,354	461,367	403,111	3,751,095	4,111,403	3,696,144
Australia .	532,878	657,481	1,161,238	4,726,340	5,648,639	9,484,977
New Zealand .	1,130,765	1,081,959	1,255,544	10,205,809	9,956,812	10,789,915
Canada . .	39,834	131,374	163,137	346,446	1,269,186	1,524,024
Other countries	105,582	66,399	66,562	808,469	589,624	585,632
Total .	5,095,511	5,287,244	5,854,501	44,234,534	49,647,492	53,216,141
MARGARINE from—	Cwt	Cwt	Cwt.	£	£	£
Netherlands .	1,202,012	1,251,088	1,313,862	4,332,611	4,494,679	4,642,013
France . .	7,802	6,672	6,080	39,297	30,842	22,994
Irish Free State	23,579	56,156	61,823	72,651	172,676	194,943
Other countries	4,777	1,428	5,330	15,252	5,080	19,587
Total .	1,238,170	1,315,344	1,387,095	4,459,811	4,703,277	4,879,537
CHEESE from—	Cwt.	Cwt.	Cwt	£	£	£
Netherlands .	207,024	144,037	141,985	875,684	637,173	638,870
Italy . .	104,895	137,869	161,154	732,098	790,513	802,062
United States .	40,869	18,110	17,885	223,746	86,043	101,076
Australia .	40,370	46,785	80,852	246,568	208,630	393,536
New Zealand .	1,368,654	1,479,293	1,392,871	7,507,511	6,832,870	6,729,920
Canada . .	1,001,612	1,004,508	1,253,968	5,284,205	4,681,760	6,726,182
Other countries	75,122	56,911	53,438	390,895	315,417	319,969
Total .	2,838,546	2,887,513	3,102,153	15,260,707	13,552,406	15,711,615
EGGS from—	Great Hundreds.	Great Hundreds.	Great Hundreds	£	£	£
Lithuania .	477,770	300,552	211,721	289,682	190,017	122,144
Denmark .	6,757,300	6,044,743	5,836,491	5,486,324	5,495,772	5,491,744
Poland (including Dantzig)	1,284,922	730,571	1,067,720	710,902	431,283	634,039
Netherlands .	1,435,392	1,234,682	1,691,631	1,075,489	1,025,037	1,409,647
France . .	1,337,724	60,301	232,359	782,771	36,970	156,000
Italy . .	415,350	422,039	525,354	307,258	345,590	451,685
Serb-Croat-Slovene-State	419,844	53,819	75,097	244,998	33,477	45,947
Egypt . .	1,209,332	1,624,460	1,161,046	628,604	860,627	546,313
China . .	1,113,024	1,033,313	1,101,433	643,936	660,125	667,693
United States.	240,041	135,394	88,084	198,085	118,518	75,949
Canada . .	377,759	270,831	246,037	323,569	246,997	217,839
Irish Free State	3,345,417	4,686,834	4,566,578	1,963,590	3,363,056	3,298,460
Other countries	1,632,068	3,681,960	5,170,491	1,161,688	2,668,119	3,543,050
Total .	20,045,943	20,279,499	21,974,042	13,816,896	15,475,588	16,660,510

TABLE No. 13.—NUMBER AND VALUE OF LIVE CATTLE, SHEEP, AND PIGS imported into the United Kingdom in the undermentioned Years. [*From Trade and Navigation Returns.*]

	Number.			Value.		
	1923.	1924.	1925.	1923.	1924.	1925.
CATTLE, from—				£	£	£
Irish Free State . .	522,446	931,614	688,120	9,480,661	16,866,496	12,730,934
Canada . . .	45,417	76,978	110,155	1,257,191	2,202,850	2,959,149
United States . .	16,532	866	1,634	525,153	25,286	51,113
Other countries .	..	740	235		20,072	7,050
Total . . .	584,395	1,010,198	800,144	11,263,005	19,114,704	15,748,246
SHEEP AND LAMBS, from—						
Canada . . .	201	..	..	500	..	..
United States . .	6,800	..	..	24,249	..	..
Irish Free State . .	365,454	584,857	400,587	1,044,117	1,754,964	1,208,888
Other countries .		4,250		.	9,541	
Total . . .	372,455	589,107	400,587	1,068,866	1,764,505	1,208,888
PIGS from—						
Irish Free State . .	279,005	234,536	97,695	1,696,930	1,170,160	618,555
Other countries			..	..	.	..
TOTAL VALUE OF ANIMALS LIVING FOR FOOD	279,005	234,536	97,695	1,696,930	1,170,160	618,555

TABLE No. 14.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS imported into Great Britain from Ireland in each of the Years 1919-1925.

	1919.	1920.	1921.	1922.	1923.	1924.	1925.
†HORSES :—							
Stallions . .	384	376	263	347	444	400	396
Mares .	8,028	11,494	11,316	11,445	11,487	12,760	7,356
Geldings .	13,370	12,849	9,873	11,553	11,474	13,060	7,566
Total . .	21,782	24,719	21,452	23,345	23,405	26,220	15,318
CATTLE : Oxen, Bulls, and Cows :—							
Fat . . .	531,842	452,481	376,138	420,308	283,666	345,167	246,829
Store . .	194,781	399,049	318,141	480,697	459,503	629,016	456,354
Other cattle .	29,947	47,106	34,010	46,295	43,236	62,970	40,936
Calves . .	8,681	27,290	39,201	30,955	26,315	40,553	36,573
Total . .	765,251	925,926	767,490	978,255	812,720	1,077,706	780,692
SHEEP :—							
Sheep . .	276,915	243,525	243,651	337,032	156,970	277,848	167,789
Lambs . .	230,230	331,215	337,610	377,731	292,182	363,746	268,653
Total . .	507,145	574,740	581,261	714,763	449,152	641,594	436,442
PIGS —							
Fat . .	192,540	158,872	62,794	128,504	314,816	179,611	55,883
Store . . .	3,773	7,750	3,056	205	3,425	6,389	2,363
Total . .	196,313	166,622	65,850	128,709	318,241	186,000	58,246

† Not including Army Horses.

EDINBURGH CORN MARKET.

Statement showing the Prices of Wheat, Barley, and Oats for the Year 1925.

The offering of grain by farmers and others in the area of the Market was not resumed during the year except for the exposure of a few samples of Wheat and Oats at intervals. It is hoped that advantage will be taken of the privilege afforded to farmers and merchants of offering grain in the open market, as undoubtedly it enables them to secure the market value, and gives a desirable indication of the true value of the various grains.

The Corn Sales Act of 1921 provides that all sales are to be effected by weight only, and expressed in terms of or by reference to the hundredweight of 112 lb. Experience has proved it to be convenient to quote at a price per 4½ cwt. for Wheat, 4 cwt. for Barley, and 3 cwt. for Oats.

The following statement gives a record of the year's proceedings in Edinburgh Corn Market.

1925.		WHEAT, per 4½ cwt.				BARLEY, per 4 cwt.				OATS, per 3 cwt.			
		Highest		Lowest.		Highest		Lowest		Highest		Lowest.	
		s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
January	7	60	0	48	0	60	0	40	0	30	6	28	0
"	14	62	0	58	0	60	0	40	0	30	6	28	0
"	21	64	0	62	0	60	0	40	0	31	0	28	6
"	28	66	0	64	0	55	0	38	0	31	0	28	0
February	4	66	0	64	0	52	6	38	0	31	0	28	0
"	11	65	0	64	0	52	6	38	0	31	0	28	0
"	18	63	0	61	0	50	0	36	0	30	6	27	6
"	25	63	0	62	0	48	0	36	0	30	6	27	6
March	4	63	0	61	0	48	0	36	0	30	6	28	6
"	11	62	0	60	0	48	0	36	0	30	6	28	0
"	18	56	0	52	0	42	0	35	0	31	0	28	6
"	25	54	0	53	0	42	0	35	0	31	0	28	6
April	1	52	0	51	0	43	0	35	0	31	0	29	0
"	8	52	6	52	0	43	0	35	0	31	0	29	6
"	15	53	0	52	0	43	0	35	0	31	0	29	6
"	22	53	0	52	0	42	0	35	0	31	6	29	6
"	29	58	0	57	0	45	0	39	0	31	6	30	0
May	6	58	0	56	0	43	0	38	0	32	0	30	6
"	13	62	0	60	0	44	0	40	0	32	6	31	0
"	20	63	0	61	0	44	0	37	0	32	6	31	0
"	27	63	0	62	0	44	0	37	0	33	0	31	6
June	3	60	0	58	0	44	0	37	0	33	6	31	6
"	10	58	0	51	0	44	0	37	0	33	6	31	6
"	17	53	0	48	0	44	0	37	0	34	0	32	0
"	24	53	0	50	0	42	0	37	0	34	0	31	6
July	1	52	0	50	0	40	0	35	0	33	6	30	0
"	8	52	0	48	0	40	0	36	0	33	0	30	0
"	15	52	0	50	0	40	0	36	0	33	0	30	0
"	22	51	0	50	0	40	0	35	0	32	6	30	0
"	29	50	0	48	0	40	0	35	0	32	6	30	0
August	5	51	0	49	0	40	0	35	0	32	6	30	0
"	12	51	0	49	0	40	0	35	0	33	0	30	0
"	19	51	6	48	0	40	0	35	0	33	0	30	0
"	26	51	0	48	0	40	0	35	0	34	6	33	0
September	2	51	0	50	0	45	0	40	0	32	0	31	9
"	9	50	6	50	0	46	0	40	0	31	9	31	6
"	16	50	0	48	0	46	0	40	0	30	0	29	0
"	23	49	6	49	0	46	0	38	0	29	6	28	0
"	30	47	0	45	0	46	0	34	0	29	0	27	6
October	7	48	0	47	0	45	0	34	0	28	6	27	0
"	14	47	6	45	0	44	0	32	0	27	6	26	0
"	21	47	6	47	0	42	0	32	0	27	0	25	6
"	28	49	6	49	0	44	0	34	0	27	0	25	6
November	4	50	0	49	0	44	0	35	0	27	0	25	0
"	11	50	6	50	0	45	0	35	0	27	3	26	0
"	18	52	0	51	0	45	0	34	0	28	0	26	0
"	25	54	0	53	0	46	0	34	0	28	0	26	6
December	2	57	0	56	0	46	0	35	0	28	0	26	6
"	9	59	0	58	0	44	0	34	0	28	0	26	6
"	16	55	0	54	0	44	0	34	0	27	6	26	0
"	23	54	0	53	0	44	0	34	0	27	6	26	0
"	30	57	0	56	0	43	0	33	0	27	9	26	6

PRICES OF SHEEP SINCE 1818.

TABLE No. 1.—CHEVIOT SHEEP.

Year.	Wethers.					Ewes.					Lambs.				
	s.	d.		s.	d.	s.	d.		s.	d.	s.	d.		s.	d.
1818	28	0	to	30	0	not quoted.					8	0	to	10	0
1819	25	0	"	27	0	15	0	to	17	0	10	6	"	12	0
1820	20	0	"	25	0	16	0	"	17	0	10	0	"	11	0
1821	18	0	"	20	0	14	0	"	16	0	7	6	"	8	0
1822	12	6	"	13	0	8	0	"	8	6	4	6	"	0	0
1823	13	6	"	18	0	7	0	"	10	6	5	6	"	6	0
1824	14	0	"	19	0	7	0	"	9	0	4	6	"	6	0
1825	29	0	"	32	0	15	0	"	19	0	9	0	"	10	6
1826	17	6	"	21	6	13	0	"	15	0	7	0	"	7	6
1827	15	0	"	24	0	not quoted.					7	0	"	8	0
1828	18	0	"	27	6	12	0	to	15	0	7	0	"	8	3
1829	18	0	"	24	0	12	6	"	14	0	7	0	"	8	6
1830	15	0	"	21	0	8	0	"	11	0	6	0	"	6	9
1831	18	0	"	25	0	9	0	"	13	0	7	0	"	8	0
1832	19	0	"	24	0	11	0	"	16	0	7	0	"	9	0
1833	22	0	"	31	0	13	6	"	20	0	8	0	"	11	3
1834	22	0	"	31	0	13	6	"	21	0	9	0	"	11	6
1835	22	0	"	27	6	18	0	"	20	6	8	0	"	11	0
1836	24	0	"	31	6	16	0	"	19	0	10	0	"	14	0
1837	19	0	"	28	0	14	0	"	19	0	10	0	"	13	0
1838	23	0	"	30	6	17	0	"	22	0	12	0	"	14	0
1839	23	0	"	31	0	14	0	"	19	0	0	0	"	13	0
1840	24	0	"	33	0	15	0	"	23	0	7	0	"	11	6
1841	23	0	"	30	0	14	0	"	22	0	8	0	"	12	0
1842	22	6	"	28	0	13	0	"	17	0	7	6	"	10	0
1843	19	0	"	25	0	8	0	"	12	0	5	0	"	8	0
1844	21	0	"	29	0	10	0	"	16	0	8	0	"	10	6
1845	23	0	"	33	0	13	0	"	20	0	8	0	"	13	0
1846	24	0	"	33	6	14	6	"	21	6	10	0	"	14	6
1847	24	0	"	35	0	18	0	"	24	0	11	6	"	15	0
1848	23	0	"	34	6	13	0	"	28	0	11	6	"	15	0
1849	21	0	"	30	2	12	0	"	21	0	0	0	"	14	0
1850	20	6	"	29	6	12	0	"	20	0	8	0	"	13	0
1851	21	6	"	31	0	13	0	"	21	0	8	9	"	14	0
1852	21	0	"	32	0	15	0	"	23	0	8	0	"	14	0
1853	26	6	"	38	0	17	0	"	23	6	9	0	"	17	0
1854	25	0	"	36	0	17	0	"	26	0	9	0	"	16	6
1855	23	6	"	36	0	16	0	"	25	0	10	0	"	17	0
1856	22	0	"	35	6	15	6	"	24	0	10	0	"	15	0
1857	24	0	"	36	0	14	6	"	26	0	10	6	"	14	6
1858	24	0	"	34	6	14	0	"	24	6	10	6	"	14	0
1859	25	0	"	34	6	16	0	"	25	0	10	3	"	14	9
1860	26	0	"	38	0	17	6	"	27	6	12	6	"	17	6
1861	25	0	"	38	6	16	0	"	28	0	9	0	"	16	0
1862	27	0	"	37	6	17	6	"	28	0	10	0	"	16	0
1863	25	0	"	38	6	19	0	"	28	6	10	6	"	16	0
1864	31	0	"	41	0	21	0	"	31	6	14	0	"	18	0
1865	32	6	"	44	0	22	6	"	33	6	14	6	"	20	0
1866	37	0	"	50	0	29	0	"	42	6	15	0	"	26	0
1867	26	0	"	58	0	18	0	"	25	6	12	0	"	16	0
1868	30	0	"	32	0	15	6	"	21	0	7	6	"	13	0
1869	28	0	"	38	0	15	0	"	22	6	7	6	"	14	0
1870	35	6	"	43	0	18	0	"	28	0	10	0	"	17	0
1871	36	6	"	49	0	22	0	"	33	6	14	0	"	20	0
1872	45	0	"	56	0	32	0	"	42	0	16	0	"	22	0
1873	42	0	"	51	0	25	0	"	42	0	15	6	"	22	0
1874	38	6	"	44	6	21	0	"	36	0	12	0	"	17	0
1875	38	0	"	48	6	21	0	"	34	0	13	6	"	23	6
1876	40	0	"	52	6	28	0	"	30	0	13	6	"	25	0
1877	41	0	"	51	0	25	0	"	37	0	15	0	"	24	0
1878	35	6	"	48	0	23	6	"	35	0	14	0	"	22	0
1879	34	0	"	44	0	21	0	"	34	0	14	0	"	20	0

TABLE No. 1.—CHEVIOT SHEEP—*Continued.*

Year.	Wethers.					Ewes.					Lambs.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1880	30	0	to	48	6	20	0	to	30	0	12	6	to	20	0
1881	32	0	"	45	6	29	0	"	34	0	14	0	"	20	0
1882	40	0	"	51	0	30	0	"	40	0	14	0	"	20	6
1883	44	0	"	55	6	34	6	"	46	6	15	6	"	23	0
1884	36	0	"	47	6	29	6	"	41	6	12	6	"	20	0
1885	30	0	"	38	0	24	0	"	31	0	12	0	"	18	0
1886	32	0	"	40	0	21	0	"	29	0	12	6	"	19	0
1887	29	0	"	36	0	18	0	"	26	0	11	0	"	16	6
1888	30	0	"	38	0	19	0	"	27	0	12	0	"	17	6
1889	36	0	"	44	0	24	0	"	32	0	14	0	"	22	0
1890	31	0	"	40	0	22	0	"	30	0	12	6	"	20	0
1891	27	0	"	38	0	16	0	"	25	0	9	0	"	16	0
1892	22	0	"	30	6	18	0	"	22	0	5	0	"	11	0
1893	26	0	"	35	6	18	0	"	28	6	8	6	"	15	0
1894	26	0	"	37	0	20	0	"	31	0	10	6	"	18	6
1895	28	0	"	39	0	22	6	"	34	0	11	6	"	19	6
1896	24	6	"	34	0	19	0	"	30	6	9	0	"	16	6
1897	27	0	"	36	0	21	0	"	31	6	11	0	"	17	6
1898	27	0	"	37	0	22	0	"	32	6	12	0	"	18	6
1899	24	0	"	33	0	20	0	"	30	6	10	6	"	16	0
1900	26	0	"	36	0	22	0	"	32	6	12	0	"	17	0
1901	25	0	"	32	6	20	0	"	29	6	11	0	"	16	0
1902	24	0	"	31	6	18	0	"	27	0	9	6	"	14	6
1903	26	0	"	34	0	21	0	"	31	0	11	4	"	18	0
1904	28	6	"	36	6	23	0	"	32	6	13	0	"	20	0
1905	27	6	"	35	0	23	0	"	38	0	14	0	"	21	0
1906	30	0	"	38	0	26	0	"	34	6	15	0	"	23	0
1907	28	0	"	34	0	22	0	"	30	6	13	6	"	19	6
1908	26	0	"	32	6	21	0	"	27	6	11	6	"	17	0
1909	24	0	"	31	0	18	0	"	25	6	9	6	"	16	0
1910	27	0	"	35	0	22	0	"	31	0	12	0	"	20	0
1911	24	0	"	31	6	18	6	"	27	6	10	6	"	18	0
1912	26	0	"	34	6	22	0	"	31	0	13	0	"	21	0
1913	30	0	"	39	0	24	0	"	35	6	16	0	"	24	0
1914	32	6	"	41	0	28	0	"	39	0	18	0	"	27	6
1915	36	0	"	46	0	31	0	"	44	0	20	0	"	30	6
1916	40	6	"	51	0	34	0	"	49	0	22	0	"	34	6
1917	43	6	"	56	0	38	0	"	56	0	24	0	"	34	0
1918	50	0	"	66	0	42	0	"	61	0	25	0	"	37	0
1919	53	0	"	69	0	44	6	"	67	0	28	0	"	40	6
1920	56	0	"	91	0	48	0	"	79	0	34	0	"	49	0
1921	45	0	"	60	0	52	3	"	85	9	33	9	"	52	3
1922	40	0	"	56	0	56	0	"	90	6	27	0	"	50	0
1923	44	0	"	65	0	61	0	"	106	0	30	0	"	62	0
1924	41	0	"	61	0	60	0	"	100	0	Ewe lambs—				
											40	0	to	65	6
											Wether lambs—				
											31	6	to	58	0
1925	39	3	"	50	0	56	0	"	88	9	Ewe lambs-				
											36	0	to	82	0
											Wether lambs—				
											22	3	to	50	6

Year.	Wethers.					Ewes.					Lambs.				
	s.	*d.*		*s*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1819	22	0	to	24	0	12	0	to	15	0	8	0	to	9	0
1820	20	0	"	28	3	15	6	"	17	0	7	0	"	8	6
1821	18	0	"	20	0	12	0	"	13	0	6	0	"	7	0
1822	11	6	"	18	6	5	6	"	6	0	4	6	"	0	0
1823	12	0	"	16	0	5	0	"	6	6	4	0	"	5	3
1824	9	6	"	13	6	6	0	"	7	0	4	0	"	5	0
1825	22	0	"	26	0	11	0	"	13	6	6	0	"	9	0
1826	15	0	"	17	0	8	0	"	9	0	4	6	"	6	0
1827	14	0	"	18	6	7	0	"	10	0	6	0	"	7	6
1828	15	0	"	20	0	8	0	"	11	0	5	0	"	7	6
1829	14	0	"	18	0	9	0	"	10	0	6	0	"	7	0

TABLE No. 2.—BLACKFACE SHEEP—*Continued.*

Year.	Wethers.					Ewes.					Lambs.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1830	9	6	to	13	0	4	0	to	6	0	4	6	to	6	0
1831	13	0	"	17	0	5	0	"	7	6	5	0	"	6	6
1832	14	0	"	18	0	7	0	"	11	6	6	0	"	7	3
1833	16	0	"	24	0	7	6	"	12	0	6	6	"	9	0
1834	16	0	"	22	0	10	0	"	13	0	6	0	"	8	6
1835	15	0	"	18	9	10	0	"	13	0	7	0	"	8	0
1836	15	0	"	21	0	9	0	"	12	0	8	6	"	11	0
1837	13	0	"	16	0	8	0	"	12	0	8	0	"	9	6
1838	15	0	"	20	6	10	0	"	13	0	not quoted.				
1839	15	0	"	22	0	10	0	"	12	0	7	0	to	8	3
1840	15	0	"	22	6	11	0	"	12	0	7	0	"	9	3
1841	16	0	"	20	0	9	0	"	11	0	6	0	"	8	0
1842	14	0	"	19	0	7	6	"	8	0	5	6	"	7	0
1843	not quoted.					4	9	"	6	6	not quoted.				
1844	15	0	to	21	0	6	6	"	10	0	5	0	to	8	0
1845	14	0	"	23	0	8	0	"	12	0	6	0	"	8	0
1846	18	0	"	24	0	10	0	"	13	0	8	0	"	9	0
1847	20	6	"	25	0	10	0	"	14	0	8	6	"	9	6
1848	20	0	"	24	0	11	3	"	12	0	8	6	"	10	0
1849	not quoted.					not quoted.					7	0	"	7	6
1850			..					..			7	0	"	0	0
1851	17	6	to	23	0	9	0	to	12	0	6	6	"	8	0
1852	18	6	"	22	0	9	6	"	12	0	4	6	"	7	9
1853	23	0	"	27	0	14	6	"	16	6	8	0	"	11	6
1854	20	0	"	26	0	11	0	"	16	6	8	0	"	10	6
1855	23	6	"	26	6	14	0	"	16	0	10	0	"	11	0
1856	17	0	"	24	0	10	0	"	20	0	7	6	"	10	0
1857	20	0	"	29	0	10	6	"	15	0	9	3	"	11	0
1858	20	0	"	27	6	9	9	"	13	9	8	3	"	10	6
1859	20	0	"	25	0	10	0	"	14	0	8	9	"	11	0
1860	21	0	"	27	3	11	0	"	16	0	10	0	"	13	6
1861	21	0	"	29	0	12	0	"	22	0	6	3	"	14	0
1862	16	9	"	27	0	12	0	"	18	8	6	0	"	12	0
1863	20	0	"	30	6	13	0	"	16	0	8	0	"	11	6
1864	25	0	"	30	0	15	0	"	19	0	10	0	"	13	6
1865	15	6	"	32	6	15	0	"	25	0	10	0	"	17	0
1866	31	6	"	40	0	20	0	"	36	0	13	6	"	22	6
1867	20	0	"	30	6	14	0	"	22	0	7	6	"	13	6
1868	20	0	"	26	0	10	6	"	13	6	7	0	"	13	0
1869	22	0	"	28	0	11	0	"	14	0	6	9	"	9	0
1870	27	0	"	32	6	13	0	"	22	0	8	0	"	14	6
1871	28	0	"	37	0	13	0	"	23	0	11	0	"	16	3
1872	31	6	"	45	0	18	0	"	32	0	12	6	"	18	0
1873	28	0	"	39	0	16	6	"	27	0	7	0	"	16	0
1874	25	0	"	35	0	13	0	"	20	0	7	0	"	14	0
1875	26	6	"	37	6	15	0	"	21	3	9	6	"	17	6
1876	30	0	"	40	0	19	0	"	24	0	13	0	"	20	6
1877	35	0	"	38	9	18	0	"	25	0	13	6	"	23	0
1878	30	0	"	36	0	17	0	"	23	0	12	0	"	22	0
1879	25	0	"	35	9	16	0	"	24	0	10	6	"	20	0
1880	26	0	"	38	0	16	6	"	22	6	10	0	"	17	0
1881	30	0	"	39	0	15	0	"	23	0	10	0	"	15	0
1882	33	0	"	46	0	20	0	"	28	0	12	6	"	18	6
1883	36	0	"	50	6	24	6	"	33	0	14	0	"	21	6
1884	29	0	"	48	6	19	6	"	28	0	12	0	"	19	6
1885	24	0	"	34	0	13	0	"	22	6	10	0	"	15	0
1886	25	0	"	34	0	12	0	"	22	0	10	6	"	16	0
1887	22	0	"	30	0	11	0	"	19	0	8	0	"	13	0
1888	22	0	"	32	0	13	0	"	24	0	10	0	"	15	0
1889	26	0	"	40	0	18	0	"	29	0	13	0	"	22	0
1890	24	0	"	37	0	14	0	"	27	0	10	6	"	19	0
1891	21	0	"	37	0	10	0	"	24	0	7	6	"	15	0
1892	16	0	"	28	6	6	0	"	17	0	8	0	"	10	0
1893	21	0	"	37	0	12	0	"	24	0	7	0	"	14	6
1894	20	0	"	37	6	14	6	"	26	6	8	6	"	16	0
1895	28	0	"	41	0	16	0	"	28	6	9	0	"	17	0
1896	19	0	"	35	4	13	0	"	24	0	6	0	"	13	6
1897	21	0	"	36	6	15	0	"	25	6	7	0	"	14	6
1898	22	0	"	37	0	16	0	"	26	6	8	0	"	15	0
1899	20	0	"	33	6	13	0	"	24	0	5	6	"	13	0
1900	23	0	"	36	0	16	0	"	26	6	8	0	"	15	6
1901	20	0	"	35	0	14	0	"	25	6	6	6	"	14	6

Table No. 2.—BLACKFACE SHEEP—*Continued.*

Year.	Wethers.					Ewes.					Lambs.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d*		*s.*	*d.*
1902	18	6	to	34	0	12	0	to	24	0	6	0	to	14	0
1903	21	0	"	36	0	15	0	"	28	0	7	0	"	16	6
1904	23	0	"	38	6	18	0	"	30	0	8	6	"	17	6
1905	21	6	"	37	0	19	0	"	31	0	9	0	"	18	6
1906	23	0	"	38	0	20	0	"	33	0	10	0	"	19	6
1907	21	0	"	33	6	17	0	"	28	0	8	6	"	17	6
1908	19	6	"	30	0	15	0	"	24	6	8	0	"	16	0
1909	17	0	"	28	0	11	6	"	22	0	6	3	"	18	0
1910	21	0	"	32	6	16	0	"	27	6	8	0	"	17	0
1911	19	0	"	29	6	14	0	"	24	0	7	0	"	15	0
1912	21	6	"	32	6	17	0	"	27	6	9	6	"	17	6
1913	24	6	"	36	0	21	0	"	31	0	12	6	"	21	6
1914	27	0	"	38	6	25	0	"	34	6	15	6	"	24	0
1915	31	0	"	42	6	29	0	"	39	6	17	0	"	25	6
1916	33	0	"	46	6	31	0	"	42	0	19	0	"	27	6
1917	36	0	"	51	0	33	0	"	47	0	21	0	"	30	0
1918	41	0	"	56	0	36	0	"	50	0	27	0	"	38	0
1919	44	0	"	62	0	39	0	"	54	6	29	0	"	36	0
1920	46	0	"	86	0	44	0	"	62	0	31	0	"	43	0
1921	32	9	"	60	9	35	3	"	62	6	20	3	"	47	0
1922	40	3	"	63	0	40	6	"	74	0	18	0	"	44	0
1923	46	0	"	65	6	43	0	"	78	0	21	0	"	45	6
1924	46	0	"	68	6	45	6	"	85	0	25	0	"	55	6
1925	36	0	"	60	0	40	0	"	78	0	17	6	"	44	0

Table No. 3.—PRICE OF WOOL, PER STONE OF 24 LB., SINCE 1818.

Year.	Laid Cheviot.					White Cheviot.					Laid Highland.					White Highland.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1818	40	0	to	42	2			..			20	0	to	22	6			..		
1819	21	0	"	22	0			..			10	0	"	10	3			..		
1820	20	0	"	22	0			..			9	0	"	10	0			..		
1821	18	0	"	20	0			..			9	0	"	10	0			..		
1822	12	6	"	14	6			..			5	0	"	6	6			..		
1823	9	0	"	10	6			..			5	0	"	5	9			..		
1824	13	6	"	15	0			..			6	0	"	6	3			..		
1825	10	6	"	22	0			..			10	0	"	10	6			..		
1826	11	0	"	14	0			..			5	0	"	5	6			..		
1827	11	0	"	14	0			..			5	6	"	6	9			..		
1828	8	0	"	11	0			..			5	6	"	6	0			..		
1829	8	6	"	11	0			..			4	3	"	0	0			..		
1830	9	6	"	11	0			..			4	6	"	5	0			..		
1831	17	0	"	20	0			..			7	6	"	8	6			..		
1832	14	0	"	16	0			..			7	0	"	7	6			..		
1833	18	0	"	20	7			..			10	0	"	11	0			..		
1834	21	0	"	24	6			..			5	6	"	7	0			..		
1835	19	0	"	20	6			..			9	6	"	10	8			..		
1836	21	0	"	25	0			—			10	0	"	14	0			..		
1837	12	0	"	14	0			—			7	0	"	7	8			..		
1838	19	0	"	22	6			..			6	0	"	10	0			..		
1839	18	0	"	20	0			..			8	0	"	12	0			..		
1840	15	0	"	0	0			..			7	0	"	0	0			..		
1841	15	0	"	16	9			..			6	0	"	7	5			..		
1842	12	6	"	14	0			..			not quoted.							..		
1843	9	0	"	11	6			..			5	0	to	6	0			..		
1844	15	0	"	18	0			..			not quoted.							..		
1845	14	6	"	17	6			..			7	6	to	8	6			..		
1846	12	0	"	14	6			..			8	0	"	8	6			..		
1847	12	6	"	14	0			..			not quoted.							..		
1848	9	6	"	11	0			..			4	9	to	0	0			..		
1849	12	0	"	16	6			..			6	0	"	6	3			..		
1850	15	0	"	17	6			..			8	0	"	8	6			..		
1851	12	0	"	16	0			..			8	0	"	9	3			..		
1852	13	0	"	15	0			..			8	0	"	9	0			..		
1853	19	0	"	22	0			..			11	0	"	12	6			..		

TABLE No. 3.—PRICE OF WOOL—*Continued.*

Year.	Laid Cheviot.	White Cheviot.	Laid Highland.	White Highland.
	s. *d.* *s.* *d.*	*s.* *d.* *s.* *d.*	*s.* *d.* *s.* *d.*	*s.* *d.* *s.* *d.*
1854	12 0 to 15 0	..	7 6 to 8 6	..
1855	14 6 " 19 0	..	8 6 " 9 0	..
1856	19 0 " 21 6	..	11 0 " 0 0	..
1857	19 0 " 24 0	..	13 0 " 14 3	..
1858	15 0 " 17 0	..	8 9 " 10 0	..
1859	18 6 " 24 0	..	10 9 " 11 6	..
1860	22 0 " 32 0	37 0 to 38 0	10 0 " 11 3	..
1861	19 6 " 27 0	from 30s. upwards.	not quoted.	..
1862	18 6 " 26 0	30 0 to 37 0	11 6 to 16 0	..
1863	25 6 " 31 0	38 0 " 42 0	15 3 " 17 6	..
1864	31 0 " 39 0	47 0 " 54 0	17 6 " 20 0	..
1865	23 0 " 30 0	44 0 " 45 0	15 0 " 17 0	..
1866	24 0 " 30 0	30 0 " 38 0	14 0 " 16 0	..
1867	16 0 " 21 6	not quoted.	not quoted.	..
1868	19 0 " 26 0	28 0 to 32 0	8 6 to 9 0	..
1869	18 0 " 26 6	not quoted.	8 6 " 10 0	..
1870	15 0 " 23 6	25 0 to 26 0	9 6 " 0 0	..
1871	20 0 " 26 6	30 0 " 34 6	12 0 " 15 0	..
1872	26 0 " 37 6	40 0 " 48 0	18 0 " 21 0	..
1873	17 0 " 18 0	34 0 " 40 0	9 0 " 12 0	..
1874	18 6 " 26 6	30 0 " 34 0	9 6 " 13 0	..
1875	25 0 " 32 0	34 6 " 36 0	12 6 " 16 0	..
1876	20 0 " 24 0	30 0 " 34 6	9 6 " 12 0	..
1877	20 9 " 26 0	28 0 " 30 0	10 0 " 12 0	..
1878	18 9 " 25 0	27 0 " 32 0	8 6 " 11 6	..
1879	15 0 " 17 0	prices very low.	7 0 " 0 0	..
1880	20 0 " 24 0	30 0 to 32 0	10 6 " 11 6	14 0 to 15 0
1881	17 0 " 21 0	27 0 " 30 0	5 0 " 9 6	12 0 " 13 0
1882	14 0 " 18 0	27 6 " 28 0	7 6 " 9 0	13 0 " 14 0
1883	13 0 " 18 0	26 0 " 28 0	6 6 " 8 6	11 6 " 12 6
1884	13 0 " 18 0	26 0 " 28 0	6 6 " 8 6	11 6 " 12 6
1885	12 0 " 17 0	22 6 " 26 0	6 0 " 8 0	11 6 " 12 0
1886	13 0 " 18 0	23 0 " 27 6	6 6 " 8 6	11 6 " 12 0
1887	14 0 " 22 0	23 0 " 28 0	7 0 " 9 0	11 6 " 13 0
1888	13 0 " 20 0	23 0 " 28 0	7 0 " 9 0	11 0 " 12 6
1889	13 0 " 18 0	24 0 " 28 0	7 0 " 9 0	11 0 " 12 6
1890	13 0 " 18 0	24 0 " 28 0	7 0 " 9 0	11 0 " 12 6
1891	12 6 " 18 0	22 0 " 28 0	7 0 " 9 0	11 0 " 12 6
1892	12 0 " 18 0	20 0 " 28 0	7 0 " 8 6	10 6 " 12 0
1893	12 0 " 17 0	20 0 " 27 0	7 0 " 8 0	10 0 " 12 0
1894	12 0 " 16 0	20 0 " 26 0	7 0 " 8 0	10 0 " 12 0
1895	12 0 " 16 0	20 0 " 25 0	7 0 " 8 0	10 0 " 11 6
1896	11 0 " 15 0	19 0 " 24 0	7 0 " 8 0	10 0 " 11 6
1897	11 0 " 14 0	18 0 " 23 0	7 0 " 8 0	10 6 " 12 0
1898	10 0 " 13 0	16 0 " 20 0	7 0 " 8 0	10 0 " 11 6
1899	10 0 " 13 0	13 0 " 18 6	7 0 " 8 0	8 6 " 9 6
1900	9 9 " 12 0	13 0 " 18 6	6 9 " 7 9	8 0 " 9 6
1901	9 0 " 10 0	11 0 " 16 6	5 9 " 6 6	8 0 " 9 0
1902	9 0 " 10 0	11 6 " 17 0	6 0 " 6 6	8 6 " 9 6
1903	10 0 " 12 0	15 0 " 18 0	7 0 " 8 0	11 6 " 12 6
1904	15 0 " 17 0	20 0 " 21 0	9 0 " 10 0	14 0 " 15 0
1905	17 0 " 20 0	24 0 " 26 0	10 0 " 11 0	15 0 " 16 0
1906	18 0 " 21 0	27 0 " 28 6	11 6 " 13 0	16 6 " 17 6
1907	*	22 0 " 24 0	11 0 " 12 6	16 0 " 17 0
1908	*	16 0 " 18 0	†	8 0 " 8 6
1909	*	24 0 " 26 0	†	12 6 " 14 0
1910	*	25 0 " 30 0	†	13 0 " 14 6
1911	*	25 0 " 30 0	†	13 0 " 14 6
1912	*	24 0 " 29 0	†	14 0 " 15 0
1913	*	25 0 " 30 0	†	17 0 " 18 0
1914	*	24 0 " 29 0	†	15 0 " 15 6
1915 ‡	*	42 0 " 46 0	†	21 0 " 22 0

* No Cheviots smeared now. † No Highlands smeared now. ‡ These are July prices.

PRICE OF WOOL PER STONE OF 24 LB.—*Continued.*

		CHEVIOT.				HALF-BRED.				BLACK-FACE.		CROSS-BRED (BLACKFACE EWE AND LEICESTER RAM).			
		Hogg.		Ewe and Wether.		Hogg.		Ewe and Wether.		Hogg.	Ewe and Wether.	Hogg.		Ewe and Wether.	
		Washed.	Un-washed.	Washed.	Un-washed.	Washed.	Un-washed.	Washed.	Un-washed.			Washed.	Un-washed.	Washed.	Un-washed.
		s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
[1] 1916	. . .	36 6	30 0	33 0	27 6	34 6	28 6	33 0	27 6	23 0	23 0	28 6	25 6	28 6	25 6
	Caithness & Sutherland	40 0	32 6	34 0	29 0	35 0	29 0	34 0	28 6						
[1] 1917	. . .	40 6	33 0	37 0	31 0	38 6	31 6	37 0	31 0	25 6	25 6	31 6	28 6	31 6	28 6
	Caithness & Sutherland	44 6	36 0	37 6	32 6	39 0	32 6	37 6	31 6						
[1] 1918	. . .	43 6	35 6	39 6	33 0	41 0	33 6	39 6	33 0	27 0	27 0	33 6	30 6	33 6	30 6
	Caithness & Sutherland	47 6	38 6	40 0	34 6	41 6	34 6	40 0	33 6						
1919	. . .	84 0	70 0	82 0	66 0	82 0	62 0	70 0	58 0	34 0	34 0	46 0	39 0	44 0	38 0
	Caithness & Sutherland	88 0	74 0	84 0	68 0	84 0	63 0	72 0	60 0						
1920	. . .	86 0	70 0	83 0	66 0	74 0	54 0	65 0	50 0	24 0	24 0	35 0	29 0	34 0	27 0
	Caithness & Sutherland	90 0	74 0	87 0	68 0	76 0	56 0	68 0	52 0						
1921	. . .	22 0	17 0	19 0	15 0	18 6	14 6	16 0	13 0	9 6	9 6	12 0	10 0	12 0	10 0
	Caithness & Sutherland	23 0	18 0	20 0	16 0	19 6	15 6	17 0	14 0						
1922	. . .	30 0	25 0	26 0	22 0	26 0	20 0	22 0	18 0	16 0	16 0	16 6	15 0	16 6	15 0
	Caithness & Sutherland	31 6	26 0	27 0	23 0	27 0	21 0	23 0	19 0						
1923	. . .	41 0	34 0	36 0	30 0	33 0	27 0	30 0	25 0	17 6	17 6	20 0	18 0	20 0	18 0
	Caithness & Sutherland	43 0	35 0	37 0	31 0	34 0	28 0	31 0	26 0						
1924	. . .	58 0	49 0	53 0	45 0	49 0	40 0	45 0	39 0	25 6	25 6	34 6	30 6	33 0	30 0
	Caithness & Sutherland	60 0	50 0	54 0	46 0	50 0	41 0	46 0	40 0						
1925	. . .	39 0	34 0	36 0	30 0	33 6	28 6	32 0	27 0	25 6	25 6	26 0	23 6	25 6	23 0
	Caithness & Sutherland	40 0	35 0	37 0	31 0	34 0	29 0	33 0	28 0						

[1] The prices given were prices fixed by Government, and not free market prices.

GENERAL SHOW AT GLASGOW, 1925.

THE ninety-fourth Show of the Society was held at Glasgow on Tuesday, 14th July, and three following days. This was the thirteenth Show held in that city.

Following a wet Spring there were two months of dry weather preceding the Show, which greatly facilitated the work of erection. The actual week of the Show was showery, but only on the Thursday afternoon did rain fall to such an extent as to affect the gate. The attendance of the public was exceptionally large, being surpassed only by the Shows at Edinburgh and Aberdeen in 1919 and 1920. The total number who paid for admission during the week was 71,536, which compared with 45,706 at Paisley in 1913.

The Corporation of Glasgow provided an excellent site in Bellahouston Park. This site was both ample and convenient, and sufficient scope was available for an attractive arrangement of the Showyard erections. The Corporation further granted a free supply of water, free police supervision, and gave a donation of 500 guineas to the Show funds. In many other ways they did everything in their power to further the success of the Show.

A party of about sixty South African farmers, who were on tour in Britain, paid a visit to the Show. They were entertained to luncheon by the Society in the Showyard on the Tuesday. On the evening of that day the Corporation of Glasgow gave a banquet in the City Chambers, at which the South African visitors were entertained, and also the Directors of the Society and the gentlemen who officiated as judges at the Show.

The entry of Live Stock was large, especially in the Cattle and Horse sections, and all over reached the usual high standard. Some exhibits from England were not forward owing to the prevalence of foot-and-mouth disease in that country. The exhibition of Agricultural Implements and Machinery was unusually comprehensive, and formed a striking feature of the Show.

The Accounts showed a credit balance of about £4100, which was the largest profit arising from any Show held by the Society.

STATISTICS.

The following tables give the number of entries in the various sections:—

1. CATTLE.

Class.	SHORTHORN.	No. of Entries	
1.	Aged bulls	8	
2.	Two-year-old bulls	7	
3.	Two-year-old bulls	5	
4.	One-year-old bulls	15	
5.	One-year-old bulls	14	
6.	Cows of any age	5	
7.	Two-year-old cows or heifers	11	
8.	One-year-old heifers	14	
9.	One-year-old heifers	16	
		—	95

ABERDEEN-ANGUS.

10.	Aged bulls	10	
	Extra Stock	1	
11.	Two-year-old bulls	7	
12.	One-year-old bulls	7	
13.	Cows of any age	10	
	Extra Stock	1	
14.	Three-year-old cows	9	
15.	Two-year-old cows or heifers	13	
16.	One-year-old heifers	18	
17.	One-year-old heifers	9	
		—	85

GALLOWAY.

18.	Aged bulls	3	
19.	Two-year-old bulls	1	
20.	One-year-old bulls	4	
21.	Cows of any age	6	
22.	Two-year-old cows or heifers	10	
23.	One-year-old heifers	13	
		—	37

BELTED GALLOWAY.

24.	Bulls born before 1st December 1923	4	
25.	Bulls born on or after 1st December 1923	3	
26.	Cows or heifers, born before 1st December 1922, in milk or in calf; if in calf to calve on or before 1st December of the year of the Show	7	
	Extra Stock	1	
27.	Heifers born on or after 1st December 1922	5	
28.	Heifers born on or after 1st December 1923	5	
		—	25

HIGHLAND.

29. Aged bulls	4	
30. Two-year-old bulls	1	
31. One-year-old bulls	8	
32. Cows of any age	6	
Extra Stock	1	
33. Three-year-old cows or heifers	6	
34. Two-year-old heifers	3	
	—	29

DAIRY SHORTHORN.

35. Cows of any age	Cancelled— Insufficient entries.
36. Cows or heifers born in or after 1922	
37. Bulls born in 1924	

AYRSHIRE.

38. Cows in milk, born before 1922	4	
39. Cows in milk, born after 1st January 1922	8	
40. Cows of any age, in calf, and due to calve before 1st December of the year of the Show	9	
41. Heifers, born in or after 1922, in calf, and due to calve before 1st December of the year of the Show	11	
42. Two-year-old heifers	9	
43. One-year-old heifers	9	
44. Aged bulls	3	
45. Two-year-old bulls	4	
46. One-year-old bulls	9	
	—	66

BRITISH FRIESIAN.

47. Cows in milk, born in or before 1921	8	
48. Cows in calf and not in milk, born in or before 1921	8	
49. Cows in milk, born in 1922 or 1923	5	
50. Heifers born in 1923	19	
51. Heifers born before 1st July 1924	9	
52. Heifers born on or after 1st July 1924	12	
53. Bulls born in or before 1922	6	
Extra Stock	1	
54. Bulls born in 1923	2	
55. Bulls born in 1924	10	
	—	80

RED POLL.

56. Cows in milk, born before 1923	5	
57. Heifers born in 1923	10	
58. Heifers born in 1924	4	
59. Bulls born in or before 1923	11	
60. Bulls born in 1924	5	
Extra Stock	1	
	—	36

FAT CATTLE.

61.	Oxen, any pure breed or cross, born after 1st December 1922	3	
62.	Oxen, any pure breed or cross, born after 1st December 1923	2	
63.	Heifers, any pure breed or cross, born after 1st December 1922	...	
64.	Heifers, any pure breed or cross, born after 1st December 1923	3	
		—	8
			461

2. HORSES.

DRAUGHT STALLIONS.

65.	Aged stallions	16	
66.	Three-year-old entire colts	13	
67.	Two-year-old entire colts	16	
68.	One-year-old entire colts	21	
		—	66

DRAUGHT GELDINGS.

69.	Aged geldings	11	
70.	Three-year-old geldings	6	
71.	Two-year-old geldings	12	
		—	29

DRAUGHT MARES AND FILLIES.

72.	Mares of any age with foal at foot	5	
73.	Yeld mares born before 1922	9	
74.	Three-year-old yeld mares or fillies	5	
75.	Two-year-old fillies	19	
76.	One-year-old fillies	10	
		—	48

HUNTERS.

77.	Hunter brood mares, with foal at foot	1	
78.	Yeld mares, fillies, or geldings, born in 1922, in hand	7	
79.	Yeld mares, fillies, or geldings, born in 1923, in hand	5	
80.	Colts, geldings, or fillies, born in 1924, the produce of a thoroughbred stallion or registered hunter sire, out of mare of any breed	6	
81.	Mares or geldings, born in or before 1921, to carry 14 st. 7 lbs. and upwards—in saddle	4	
82.	Mares or geldings, born in or before 1921, to carry 12 st. 7 lbs., and under 14 st. 7 lbs.—in saddle	15	
83.	Mares or geldings, born in or before 1921, to carry under 12 st. 7 lbs. —in saddle	9	
84.	Hack of hunter type, born in or before 1921, 15·2 hands or under—in saddle	8	
		—	55

HACKNEYS.

85.	Brood mares, over 14 hands, with foal at foot or to foal this season to a registered sire	2	
86.	Yeld mares or fillies, born in or after 1922	2	
87.	Stallions, born in or before 1922, over 14 hands	2	
		—	6

Ponies.

88. Stallions, three years old and upwards, 14 hands and under, in hand	2	
89. Yeld mares, fillies, or geldings, three years old and upwards, 14 hands and under, in saddle	5	
	—	7

Highland Ponies.

90. Stallions, born before 1923, not exceeding 14·2 hands	1	
91. Mares, born before 1923, not exceeding 14·2 hands, yeld or with foal at foot	5	
92. Entire colts, born on or after 1st January 1923	1	
93. Fillies, born on or after 1st January 1923	2	
	—	9

Western Island Ponies.

94. Stallions, born before 1923, not exceeding 14 hands	4	
Extra Stock	2	
95. Mares, born before 1923, not exceeding 14 hands, yeld or with foal at foot	9	
Extra Stock	1	
96. Entire colts, born on or after 1st January 1923	1	
97. Fillies, born on or after 1st January 1923	4	
	—	21

Shetland Ponies.

98. Stallions, not exceeding 10½ hands, born before 1922	8	
Extra Stock	1	
99. Entire colts, not exceeding 10½ hands, born in 1922 or 1923	3	
100. Mares, not exceeding 10½ hands, with foal at foot	10	
101. Yeld mares, not exceeding 10½ hands	9	
102. Fillies, not exceeding 10½ hands, born in 1922 or 1923	8	
	—	39

Riding Ponies.

103. Mares or geldings, any age, over 12 hands and not exceeding 14 hands, in saddle, to be ridden by boy or girl 10 years and under 14 years of age	11	
104. Mares or geldings, any age, not exceeding 12 hands, in saddle, to be ridden by boy or girl under 10 years of age	7	
	—	18

Horses in Harness.

105. Yeld mares, fillies, or geldings, any age, in harness, 15 hands and upwards, to be driven in the ring	13	
106. Yeld mares, fillies, or geldings, any age, in harness, 14 hands and under 15 hands, to be driven in the ring	9	
Extra Stock	1	
107. Yeld mares, fillies, or geldings, any age, under 14 hands, to be driven in the ring (6)	3	
108. Yeld mares, fillies, or geldings, any age, in harness, exceeding 15 hands, which have never won a first prize exceeding the value of £10 at any Show prior to 1st January 1925 (sales excluded) (6)	1	
		—
Carry forward		27

Brought forward		27
109. Yeld mares, fillies, or geldings, any age, in harness, over 14 hands and not exceeding 15 hands, which have never won a first prize exceeding the value of £10 at any Show prior to 1st January 1925 (sales excluded) (7)	...	
110. Yeld mares, fillies, or geldings, any age, in harness, not exceeding 14 hands, which have never won a first prize exceeding the value of £10 at any Show prior to 1st January 1925 (sales excluded) (8)	1	
	—	28
111. Yeld mares, fillies, or geldings, any height, drawn from foregoing Classes, and which have not won a prize in Classes 105 to 110	Drawn from Classes 105-110.	

Draught Geldings in Harness.

112. Draught geldings, any age, in harness, shown in cart or lorry (and driven by single driver), it being a condition that the horse must have been regularly worked for a period of 12 weeks prior to the first day of the Show (1)		14
		340

Jumping.

1. Horses or ponies, any height	22	
2. Horses or ponies, any height—handicap	20	
3. Horses or ponies, any height—handicap	17	
4. Hunter, the property of a subscriber to any recognised pack of hounds in Scotland, and which has been fairly ridden to hounds in any country during season 1924-1925 by its owner	13	
5. Horses or ponies, any height	19	
	—	91

3. SHEEP.

Blackface.

113. Tups above one shear	12	
114. Shearling tups	35	
115. Shearling tups—out-wintered	16	
116. Tup lambs	12	
117. Ewes above one shear, with lamb at foot	19	
118. Shearling ewes or gimmers	15	
	—	109

Cheviot.

119. Tups above one shear	8	
120. Shearling tups	20	
121. Tup lambs	15	
122. Ewes above one shear, with lamb at foot	8	
123. Shearling ewes or gimmers	12	
	—	63

Border Leicester.

124. Tups above one shear	7	
125. Shearling tups	29	
126. Ewes above one shear	10	
127. Shearling ewes or gimmers	17	
	--	63

Half-bred.

128. Tups above one shear	1	
129. Shearling tups	9	
130. Ewes above one shear	2	
131. Shearling ewes or gimmers	4	
132. Three ewe lambs	5	
	—	21

Oxford Down.

133. Shearling tups	8	
134. Shearling ewes or gimmers	7	
135. Tup lambs	7	
136. Three ewe lambs	3	
	—	25

Suffolk.

137. Tups one shear and over	6	
Extra Stock	1	
138. Shearling ewes or gimmers	14	
139. Tup lambs	16	
140. Three ewe lambs	8	
	—	45

Shropshire.

141. Shearling tups	6	
142. Shearling ewes or gimmers	5	
	—	11

Dorset Horn.

143. Tups, any age	3	
144. Ewes or gimmers	4	
Extra Stock	1	
	—	8

Fat Sheep.

145. Three fat lambs, any breed or cross, dropped in the year of the Show	4	
	—	4
		349

4. GOATS.

146. Male goats, any variety, over two years	1	
Extra Stock	1	
147. Male goats, any variety, over one but not exceeding two years	4	
148. Male kids, any variety, not exceeding one year	1	
149. Female goats, Anglo-Nubian, in milk	2	
150. Female goats, any other variety, in milk	9	
151. Goatlings, any variety, over one but not exceeding two years	6	
152. Female kids, any variety, not exceeding one year	6	
153. Milking competition, open to Classes 149 and 150 (animals two years and over) (6)	1	
	—	31

5. PIGS.

Large White.

154.	Boars born before 1924	2	
155.	Boars born in 1924	4	
156.	Boars born in 1925	7	
157.	Sows born before 1924	6	
	Extra Stock	1	
158.	Sows born in 1924	7	
159.	Sows born in 1925	5	
		—	32

Middle White.

160.	Boars, any age	5	
	Extra Stock	1	
161.	Boars born in 1925	7	
162.	Sows born before 1924	11	
163.	Sows born in 1924	5	
164.	Sows born in 1925	5	
		—	34

Berkshire.

165.	Boars, any age	2	
166.	Boars born in 1925	3	
167.	Sows, any age	4	
168.	Sows born in 1925	2	
		—	11

Large Black.

169.	Boars born before 1924	5	
170.	Boars born in 1924	5	
171.	Boars born in 1925	8	
172.	Sows born before 1924	9	
173.	Sows born in 1924	11	
174.	Sows born in 1925	7	
		—	45

Cumberland.

175.	Boars, any age	3	
176.	Boars born in 1925	5	
177.	Sows, any age	5	
178.	Sows born in 1925	4	
		—	17

Large White Ulster.

179.	Boars born before 1st September 1924	6	
180.	Boars born on or after 1st September 1924	11	
181.	Sows born before 1st September 1924	7	
182.	Sows born on or after 1st September 1924	15	
		—	39
			178

6. POULTRY.

1-113.	Poultry		577

7. FUR-PRODUCING RABBITS.

1-10.	Rabbits		178

8. DAIRY PRODUCE.

1.	Powdered butter, not less than 3 lb.	17	
2.	Fresh butter, three 1-lb. rolls	20	
3.	Cheddar cheese, 56 lb. and upwards	31	
4.	Sweet-milk cheese, flat shape, white in colour, from a dairy where all cheese is made according to the Dunlop method	1	
5.	Cheese, 14 lb. and under	22	
		—	91

9. HONEY, &c.

OPEN CLASSES.

1.	Six sections of comb honey	12	
2.	Six sections of heather honey	..	
3.	Six jars of run or extracted light-coloured honey, approximate weight 6 lb.	7	
4.	Six jars of run or extracted medium or dark-coloured honey, excluding heather, approximate weight 6 lb.	8	
5.	Six jars of pressed heather honey in liquid form, approximate weight 6 lb.	4	
6.	Six jars of granulated honey, approximate weight 6 lb.	8	
7.	Two shallow frames of comb honey for extracting purposes	3	
8.	Products made with the aid of honey	2	
9.	Best display of honey in any form staged in space 3 feet by 3 feet, height from table not exceeding 4 feet, weight of honey not to exceed 100 lb.	1	
10.	Best display of honey in any form staged in space 3 feet by 3 feet, height from table not exceeding 4 feet, weight of honey not to exceed 40 lb.	1	
11.	Best exhibit of not less than 1 lb. of wax in any form	6	
12.	Best exhibit of not less than 1 lb. of wax made into shape for retail trade and over-counter trade	9	
13.	Observatory hive with queen and bees	5	
		—	66

CONFINED TO SCOTTISH EXHIBITORS.

14.	One shallow frame of comb honey for extracting purposes	6	
15.	Six sections of comb honey	12	
16.	Six sections of heather honey	2	
17.	Six jars of run or extracted medium or dark-coloured honey, excluding heather, approximate weight 6 lb.	9	
18.	Six jars of run or extracted light-coloured honey, approximate weight 6 lb.	5	
		—	34
			100

10. WOOL.

Pure Breed Classes.

1. Blackface ewe	16	
2. Blackface wedder	7	
3. Blackface hogg	15	
4. Cheviot ewe	8	
5. Cheviot hogg	5	
6. Border Leicester ewe	4	
7. Border Leicester hogg	4	
8. Half-bred ewe	5	
9. Half-bred hogg	4	
10. Shetland ewe	6	
11. Shetland hogg	5	
	—	79

11. RURAL INDUSTRIES.

1-24	315

12. HORSE-SHOEING.

1 and 2	77

ABSTRACT.

1. Cattle	461
2. Horses	340
3. Sheep	349
4. Goats	31
5. Pigs	178
6. Poultry	577
7. Fur-Producing Rabbits	178
8. Dairy Produce	91
9. Honey, &c.	100
10. Wool	79
11. Rural Industries	315
12. Horse-Shoeing	77
	2776

The following table gives a comparative view of the entries of cattle, horses, sheep, pigs, poultry, dairy produce, bee appliances and honey, wool, &c., and implements, of the value of the premiums offered, and of the receipts at the entrance-gates, grand stands, and for catalogues at the Shows which have been held in the Glasgow Show Division :—

Year.	Cattle.	Horses.	Sheep.	Goats.	Pigs.	Poultry.	Rabbits.	Dairy Produce.	Honey, &c.	Wool.	Rural Industries.	Horse-Shoeing Competition.	Implements.	Premiums.	Drawings at Show.
1826	226	49	26	...	24	. .	...	...	...	...	...	...	50	£186	£275
1828	314	42	26	...	42	7	...	. .	...	...	...	...	30	277	400
1835	320	70	88	...	36	1	...	43	. .	...	...	...	29	576	325
1838	461	121	102	...	45	...	...	39	...	...	...	...	62	731	849
1844	558	210	166	...	57	27	...	277	...	...	...	...	357	1600	1,892
1850	484	164	241	...	73	86	...	316	...	...	...	...	577	1359	1,909
1857	415	240	298	...	89	143	. .	234	...	...	...	...	610	1500	2,415
1867	286	212	257	...	58	150	...	143	...	...	...	...	1344	1600	3,005
1875	411	405	296	...	48	479	...	152	. .	...	...	...	2220	2665	6,231
1882	376	331	232	.	39	254	...	122	. .	..	. .	.	2622	2818	3,249
1888	300	308	293	.	26	209	...	110	. .	...	...	.	1606	2464	2,187
1897	317	350	245	...	30	275		126		118	...	44	2227	2897	4,392
1905	310	462	284	...	60	534	...	79	...	. .	. .	. .	1875	3702	4,460
1913	408	472	334	. .	48	536	.	95				54	1968	5109	6,460
1925	461	340	349	31	178	577	178	91	100	79	315	77	2570	6136	12,865

A COMPARISON.

The following figures relating to some of the most successful Shows the Society has held will be perused with interest :—

	Cattle.	Horses.	Sheep.	Pigs.	Poultry.	Total Live Stock.	Implements.	Premiums.	Drawings at Show.	Profit.
Glasgow, 1867 .	286	212	257	58	150	963	1344	£1600	£3,005	£1307
Edinburgh, 1869	310	212	340	22	239	1123	1900	1600	4,078	2067
Glasgow, 1875 .	411	405	296	48	479	1639	2220	2665	6,231	3316
Edinburgh, 1877	339	342	305	30	234	1250	2292	2714	6,734	3710
Edinburgh, 1884	580	453	493	35	253	1814	2282	4343	6,548	1855
Edinburgh, 1893	380	349	294	31	360	1414	2268	2600	4,918	2323
Aberdeen, 1894 .	314	324	184	34	365	1221	2532	2440	5,121	1678
Perth, 1896 .	292	258	204	20	374	1148	1945	2205	4,788	2511
Glasgow, 1897 .	317	350	245	30	275	1217	2227	2897	4,392	2021
Edinburgh, 1899	386	518	477	46	551	1978	2585	3844	10,285	3911
Stirling, 1900 .	321	288	369	28	457	1463	2095	2915	4,305	1078
Inverness, 1901 .	360	257	204	22	499	1340	1460	2806	2,485	99
Aberdeen, 1902 .	330	253	243	42	475	1343	1988	2796	4,413	1604
Perth, 1904 .	348	315	283	35	413	1394	1972	3058	4,993	1828
Glasgow, 1905 .	310	462	284	60	534	1750	1875	3702	4,473	1208
Peebles, 1906 .	253	258	291	40	438	1280	1658	3072	2,596	416
Edinburgh, 1907	363	464	352	58	605	1842	2140	3614	7,061	2309
Aberdeen, 1908 .	331	299	237	42	509	1418	1931	3045	4,596	1881
Stirling, 1909 .	330	355	249	54	539	1527	1977	3017	4,638	1100
Dumfries, 1910 .	270	355	295	54	481	1455	1950	3057	3,411	562
Paisley, 1913 .	408	472	334	48	536	1798	1968	5109	6,468	2527
Edinburgh, 1919	215	301	221	43	398	1238	1605	4517	17,377	3275
Aberdeen, 1920 .	340	250	279	112	597	1597	2065	4608	14,120	1679
Stirling, 1921 .	367	279	299	188	582	1774	2201	5055	12,822	2350
Dumfries, 1922 .	422	272	339	229	588	1891	2156	5488	11,428	1090
Perth, 1924 .	406	283	366	202	760	2038	2382	5712	10,758	2311

CATTLE.

The entries in the Cattle section reached a total of 461, which was the largest entry of cattle since the great Centenary Show held at Edinburgh in 1884.

Shorthorns, in point of numbers, were practically the same as last year, and the standard of merit was fully maintained. Mr W. S. MacWilliam, Garbity, Orton Station, was successful in securing the President's Champion Medal with his aged bull "Saltoun Jehu," 166,834 (Fig. 56), a dark roan of great substance and breed character. This bull was bred by Captain A. M. Talbot Fletcher of Saltoun Hall, Pencaitland, and was got by "Sanquhar Grand Courtier," 139,193, out of "Saltoun Jenny Lind." It was also awarded the Tweeddale Gold Medal, the Duthie Perpetual Challenge Cup, and the Special Prize of £20 given by the Shorthorn Society for the best bull. The reserve for the Championship was the yearling heifer "Kinneddar Eliza," a thick, evenly fleshed roan, bred and exhibited by Mr George Dalziel, Blairsgreen Farm, Kinneddar, and got by "Hindley Clipper King," 172,453, out of "Cudham Eliza 2nd," 27,241. This heifer was also awarded the Shorthorn Society's Special Prize of £20 for the best female.

There was an exceptionally good display of Aberdeen-Angus cattle, although the entries, which numbered 85, were 20 less than at Perth the previous year. A female again carried off the supreme championship, this being "Jeka Erica," 72,127 (Fig. 57), a three-year-old cow of great quality and breed character. She was bred and exhibited by Mr J. E. Kerr of Harviestoun, Dollar, and got by "Euripus of Ballindalloch," 43,615, out of "Jetta Erica," 60,539. Besides securing the President's Champion Medal, this animal was awarded the Aberdeen-Angus Cattle Society's Champion Gold Medal and the Ballindalloch Challenge Cup for the best cow. The Ballindalloch Challenge Cup for best bull was won by Mr J. H. Pattullo, Pitskelly, Carnoustie, with "Pan of Philorth," 51,125, a four-year-old bull, bred by Lord Saltoun of Philorth.

While Galloways were not too numerous, there was an entry of 37, and the quality was well maintained. The President's Champion Medal and the Dr Gillespie Memorial Challenge Trophy were awarded to Mr John Drynan, Knockiebay, New Luce, for "Tarbreoch Doris 17th," 27,476 (Fig. 58), a stylish five-year-old cow, bred by Mr John Cunningham, Tarbreoch, Dalbeattie, and got by "Sapphire," 12,268, out of "Tarbreoch Doris 3rd," 19,511.

Entries in the Belted Galloway section numbered 25, and provided an interesting display. Mr J. Douglas Brown, Knockbrex, Kirkcudbright, secured the President's Champion Medal and the Knockbrex Challenge Cup with "Knockbrex Lady Belinda," 175 B (Fig. 59), a four-year-old home-bred cow of great quality, sired by "Knockbrex Viking," 50 B, dam "Knockbrex Empress," 172 B.

Although Highland Cattle secured only 29 entries, the all-round quality was good. Supreme honours went to the Earl of Southesk, Kinnaird Castle, Brechin, for his grand seven-year-old home-bred cow "Princess Caroline II.," 9400 (Fig. 60). This animal, which was got by "Asgard," 2377, out of "Princess Caroline," 7392, won the President's Champion Medal, the Renfrewshire Perpetual Gold Challenge Cup, and the Perpetual Victory Challenge Cup given by the Highland Cattle Society for the best female. The corresponding cup given by the latter Society for the best bull went to the Duke of Atholl, K.T., Blair Castle, Blair Atholl, for his home-bred yearling bull "Maor Riabhach of Atholl."

The Dairy Shorthorn Classes were again cancelled on account of insufficient entries.

Despite the fact that the Show was held practically in their own district, the entry of Ayrshire cattle was disappointing. Of the total of 66 catalogued, a considerable number were not forward. The President's Champion Medal, the Fife and Kinross Perpetual Gold Challenge Cup, the Cowhill Champion Cup, and the Special Prize of £10 given by the Ayrshire Cattle Herd-book Society for the best female, were all secured by Mrs Mary M'Allister, Meikle Kilmory, Rothesay, with her beautiful three-year-old cow "Meikle Kilmory Snow Queen 2nd," 84,771 (Fig. 61), bred by exhibitor, and got by "Knockdon Douglas," 19,133, out of "Meikle Kilmory Snow Queen," 64,308. The Reserve for Championship honours and winner of the Ayrshire Cattle Herd-book Society's special prize of £10 for the best bull was "Hobsland Duplicate," 22,581, a three-year-old bull belonging to Mr James Howie, Hillhouse, Kilmarnock.

The exhibition of British Friesians formed a distinct feature of the Cattle section. There was an entry of 80, with few absentees. The President's Champion Medal was awarded to Dr William Sinclair, Loirston, Aberdeen, for his handsome seven-year-old home-bred cow "Kirkhill Nellie 7th," 34,296 (Fig. 62), sired by "Kirkhill (Imported) Karel 2nd," 4051, out of "Kirkhill Nellie," 2016. This cow was also awarded the MacRobert Champion Silver Bell, presented by Lady Rachel Workman MacRobert, Douneside, Tarland, and which was offered for competition for the first time at this Show. The British Friesian Cattle Society's Special Prize of £5 for the best female was also won by "Kirkhill Nellie 7th," the corresponding prize for best bull going to Mr George T. Eaton, Thurston Hall, Framfield, Sussex, for his three-year-old bull "Thurston Karel President," 21,581.

Red Poll Classes obtained an entry of 36, and gave a creditable display. Mr A. Carlyle Smith, Sutton Hall, Woodbridge, Suffolk, won the President's Champion Medal with his two-year-old bull, of exceptional quality, "Ashmoor Alert" (Fig. 63). This animal, bred by exhibitor, was got by "Davyson 363rd," 11,926, out of "Ashmoor Vi," 25,448. The reserve for the Championship and winner of the Kinmount Challenge Cup for best female was the two-year-old heifer "Ashmoor Berry," 31,996, also the property of Mr A. Carlyle Smith.

The entries of Fat Cattle were small. The winner of the President's Champion Medal was a two-year-old ox (Fig. 64), the property of the Earl of Elgin and Kincardine, C.M.G., Broomhall, Dunfermline, and bred by Mr John Macdonald, Bogney, Dunphail.

HORSES.

A number of new classes were included in the Horse section, which was one of the outstanding features of the Show, the total entry of 340 being the largest since 1914.

As usual, Draught Horses were a distinct success, the classes being well filled, especially those for Stallions and Colts. The President's Champion Medal for best Clydesdale Stallion or Colt was secured by Messrs T. & M. Templeton, Sandyknowe, Kelso, with the well-known three-year-old bay colt "Benefactor," 20,867 (Fig. 65). This colt, bred by Mr William Meiklem, Bennochy Park, Kirkcaldy, was got by

"Fyvie Sensation," 20,042, out of "Maud of Begg," 50,902. Mr James Beaton, Mains of Glack, Pitcaple, was awarded the William Taylor Memorial Prize and Certificate as breeder of the best Clydesdale colt under two years old, "Craigie Ambition," exhibited by Mr James Kilpatrick, Craigie Mains, Kilmarnock.

There was a good display of Draught Geldings, the six-year-old bay gelding "Blythe" (Fig. 66), exhibited by Mr James Fleming, Barns of Claverhouse, Dundee, being awarded the President's Champion Medal.

Draught mares and fillies were not so numerous as at Perth the previous year, but many fine animals were exhibited. After keen competition the President's Champion Medal and the Paisley Perpetual Gold Challenge Cup went to "Craigie Ella" (Fig. 67). This beautiful brown three-year-old filly, which also won the Championship last year, was the property of Mr James Kilpatrick, Craigie Mains, Kilmarnock, and was bred by Mr James Cairns, Abercrombie, St Monance. She was sired by "Craigie Litigant," 19,071, dam "Abercrombie Emma," 47,287. The Cawdor Challenge Cup, for which "Craigie Ella" was not eligible, having won it at Perth, was awarded to the five-year-old bay mare "Gladys," the property of Messrs T. & M. Templeton, Sandyknowe, Kelso.

Entries in the classes for Hunters numbered 55, which compared with 22 the previous year, and, on the whole, the quality of the exhibits was very good. Major A. D. Thomson, Nenthorn, Kelso, secured the Championship with his five-year-old brown gelding "Indicator" (Fig. 68), a fine upstanding hunter, bred by Mr Francis R. Turner, Upper Nisbet, Ancrum. His sire was "Be Very Wise," and dam "Sundorne." The Champion Gold Medal given by the Hunters' Improvement, &c., Society for best filly not exceeding three years old went to "Sunflower," the property of Brig.-General R. Cheape, C.M.G., D.S.O., M.C., Wellside, Gateside, Fife.

Only a small number of Hackneys and Ponies were on view. The President's Champion Medal was obtained by Mr Enoch Glen, Kaim Park, Bathgate, with "Terrington Housemaid," 18,664 (Fig. 69), an excellent aged dark brown mare, bred by Sir Gilbert Greenall, Bart., Walton Hall, Warrington, and got by "Goldfinder 6th," 1791, out of

"Terrington Milkmaid," 13,976. The champion pony was found in the three-year-old bay stallion "Holland Maniton," 14,014 (Fig. 70), also exhibited by Mr Enoch Glen, and bred by Mrs J. van Nievelt van Hattum, Camilla Lacey, Dorking, sire "Champion Torchfire," 9472, and dam "Lady Cass," 19,255.

Highland Ponies were disappointing in numbers, there being only an entry of 9. Mr James M. Cairns, Ardlarach House, Luing, Oban, secured the President's Champion Medal with his four-year-old dun mare "Moira," 5090 (Fig. 71), bred by Mr A. Fraser, Pittentian, Crieff, and sired by "Bonnie Laddie," 329.

Western Island Pony classes were well filled, and the animals forward gave a good display. The Championship and the Highland Pony Society's Special Prize of £10 were awarded to Mr J. Moncrieff Wright of Kinmonth, Bridge of Earn, for his handsome five-year-old black mare "Isle of Arran Bonnie Jean," 4408 (Fig. 72). She was bred by H.M. the King at Balmoral Castle, and was got by "Glencorrodale," 838, out of "Isle of Arran Bonnie Mary," 2246.

Although the total entry of Shetland Ponies was less than at Perth the previous year, many excellent specimens of the breed were on view. Mrs Etta Duffus was again successful in securing the President's Champion Medal with her sturdy home-bred five-year-old black stallion "Dibblitz of Penniwells," 1087 (Fig. 73). This stallion, which also won the Championship the previous year, was sired by "Blitz," 848, out of "Diddy," 2193. The Shetland Pony Society's Silver Medal for the best pony of the sex opposite to that of the winner of the President's Champion Medal was also secured by Mrs Etta Duffus with her seven-year-old black mare "Mayfair of Penniwells," 4052.

The Horses in Harness were augmented by the inclusion of three Novice Classes, and the number of entries reached the very satisfactory total of 55. This section was judged on Wednesday, the second day of the Show, and the quality of the animals forward was extremely good. After keen competition, Mr William S. Miller, Balmanno Castle, Bridge of Earn, obtained the President's Champion Medal with "Billet Doux," G382 (Fig. 74), a grand four-year-old brown gelding, bred by Mr C. H. Wing, Boston, Lincolnshire. His sire was

"Southworth Swell," 11,219, and dam "Jenny Melbourne," 23,186. The "Glasgow" Champion Challenge Cup, offered for competition for the first time at this Show, was also awarded to this animal.

A special addition was made to the Prize List by the inclusion of a class for Draught Geldings in Harness, with nine prizes. This class was judged on Thursday, and the winner of the President's Champion Medal was Mr James Fleming, Barns of Claverhouse, Dundee, with his seven-year-old brown gelding "Utility," bred by Mr George M'Conachie, Lower Auchmill, Rothiemay, and sired by "Parona," 18,481.

Two classes were provided for Children's Riding Ponies, and these gave a picturesque display.

The Jumping Competitions included an extra class for hunters which had been regularly ridden to hounds. These competitions were, as usual, a source of great interest.

SHEEP, PIGS, &C.

The total entry of Sheep was a little less than the previous year, but the quality was well maintained.

In the Pig section, classes were introduced for the first time for Large White Ulster pigs, and these classes attracted a large entry.

Goats were disappointing in numbers, eight classes securing only 31 exhibits.

The winners of the President's Champion Medals are shown in Figs. 75 to 89.

A section for Fur-bearing Rabbits was also provided for the first time with 10 classes, and these were well supported with entries.

Many fine exhibits were seen in the Poultry, Dairy Produce, Honey, Wool, and Rural Industries Sections, and were a source of attraction to many interested visitors.

Seventy-seven competitors took part in the Horse-Shoeing Competitions, and the public showed a keen interest in the work while the competitions were in progress.

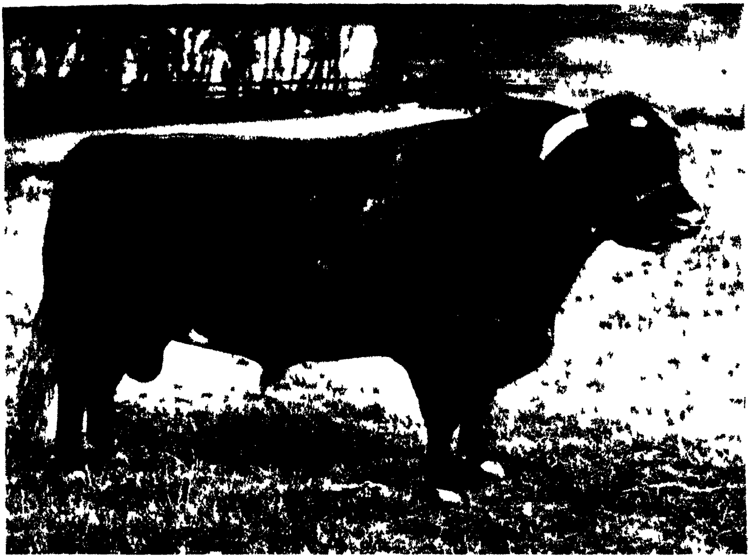

Fig 56 — SHORTHORN BULL, "SALTOUN JEHU" 166,831

Winner of President's Medal for best Shorthorn, Glasgow Show 192 The property of Mr W S MacWilliam Garbity Orton Station Morayshire Bred by Captain A M Talbot Fletcher of Saltoun Saltoun Hall Pencaitland Age five years and three months

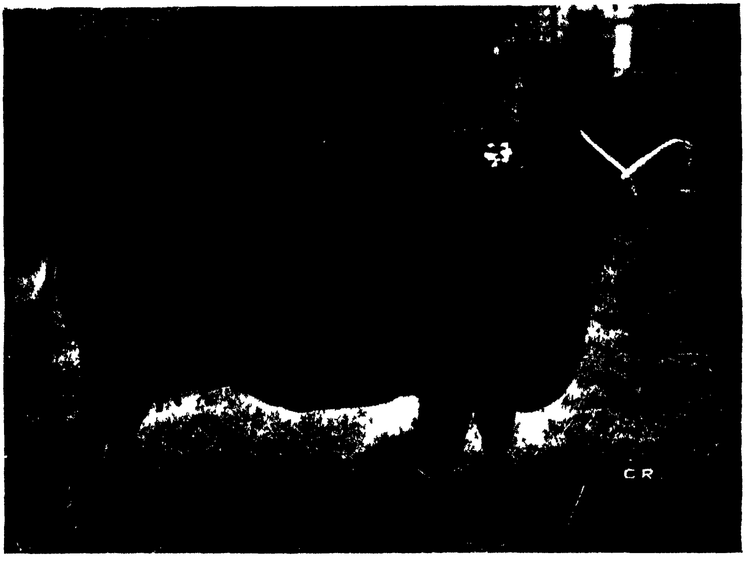

Fig 57 — ABERDEEN ANGUS COW, "JEKA ERICA" 72,127

Winner of President's Medal for best Aberdeen Angus animal Glasgow Show, 1925 Bred by and the property of Mr J E Kerr of Harviestoun Dollar Age three years and seven months

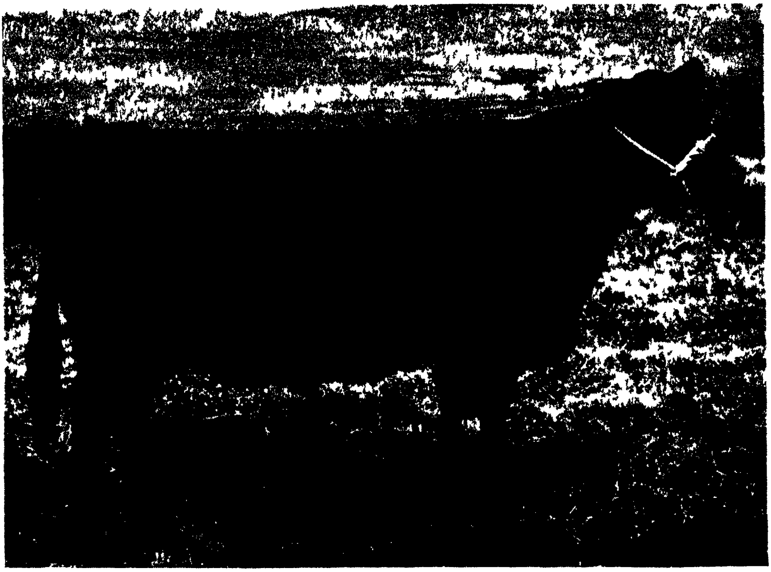

Fig 58 —Galloway Cow, 'Tarbreoch Dolly 17th' 27,476

Winner of President's Medal for best Galloway, Glasgow Show, 19[illegible]
John Drynan, Knockiel, New Luce Bred by Mr J H Currie,
Beattie Age f[illegible] years and three months

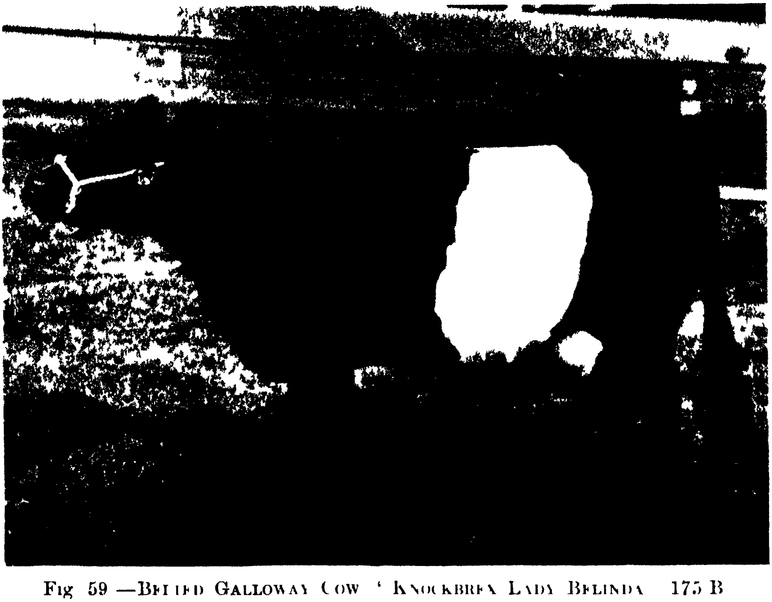

Fig 59 —Belted Galloway Cow 'Knockbrex Lady Belinda' 175 B

Winner of President's Medal for best Belted Galloway animal, Glasgow Show, 1925 Bred by
and the property of Mr J Douglas Brown, Knockbrex, Kirkcudbright Age four years
and eleven months

Fig 60 HIGHLAND COW, "PRINCESS CAROLINE II" 9400

Winner of Presidents Medal for best Highland animal Glasgow Show 1925 Bred by and the property of The Earl of Southesk Kinnaird Castle Brechin Age seven years

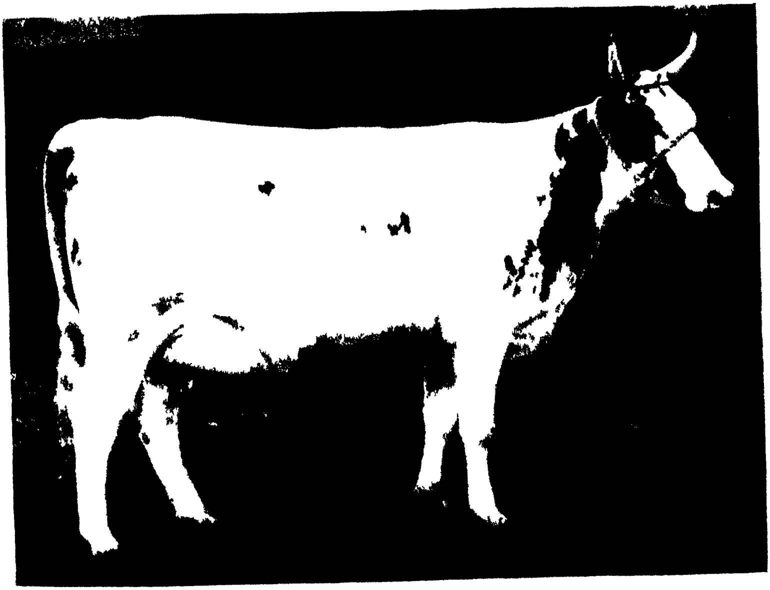

Fig 61 --AYRSHIRE COW, "MEIKLE KILMORY SNOW QUEEN 2ND" 84,771

Winner of Presidents Medal for best Ayrshire Glasgow Show 1925 Bred by and the property of Mrs Mary M'Allister, Meikle Kilmory, Rothesay Age three years and three months

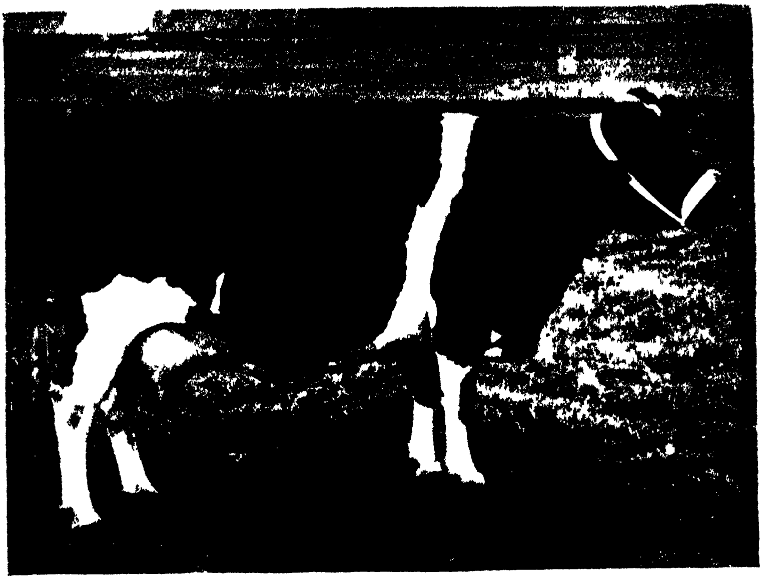

Fig 62.—British Friesian Cow, "Kirkhill Nellie 7th" 31,296

Winner of President's Medal for best British Friesian animal, Glasgow Show, 1925. Bred by and the property of Mr William Sinclair, [illegible], Aberdeen. Age seven years and five months

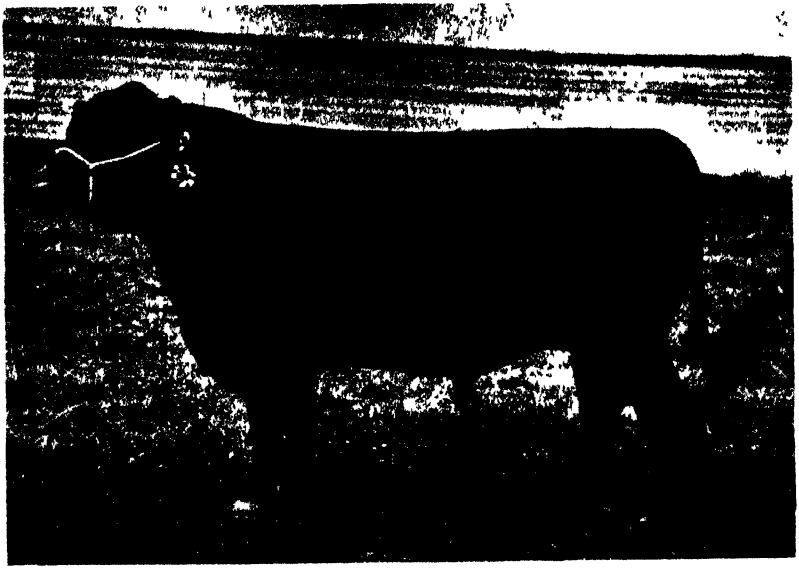

Fig. 63.—Red Poll Bull, "Ashmoor Alert."

Winner of President's Medal for best Red Poll, Glasgow Show, 1925. Bred by and the property of Mr A Carlyle Smith, Sutton Hall, Woodbridge, Suffolk. Age two years and four months

Fig 64 ABERDEEN ANGUS CROSS OX.

Winner of President's Medal for best Fat animal, Glasgow Show, 1925 The property of the Earl of Elgin and Kincardine C M G. Broomhall Dunfermline Bred by Mr John Macdonald, Bogney Dunphail Age two years

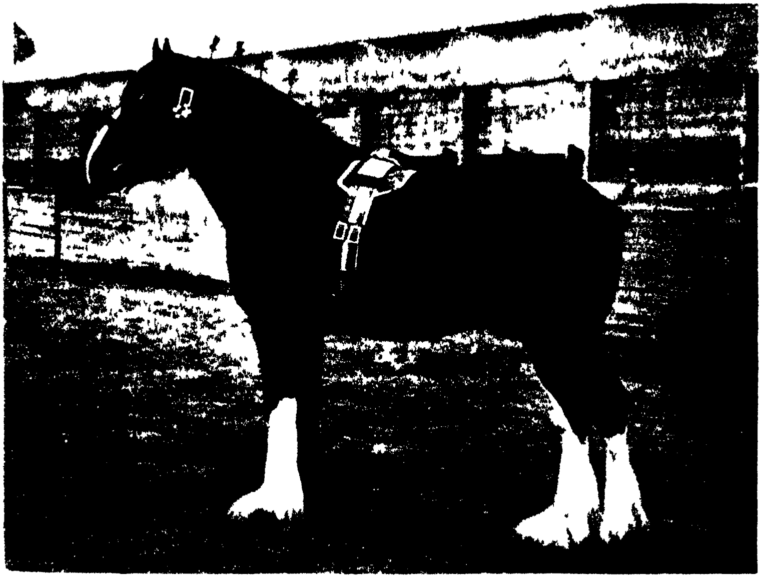

Fig 65.—CLYDESDALE COLT, "BENEFACTOR" 20,867.

Winner of President's Medal for best Clydesdale Stallion or Colt, Glasgow Show, 1925 The property of Messrs T & M Templeton, Sandyknowe, Kelso Bred by Mr William Meiklem, Bennochy Park, Kirkcaldy Age three years and three months.

Fig. 66.—DRAUGHT GELDING, "[illegible]"

Winner of President's Medal for best Draught Gelding, Glasgow Show 192[illegible]. The property of Mr James [illegible], [illegible], Dalry, Ayrshire.

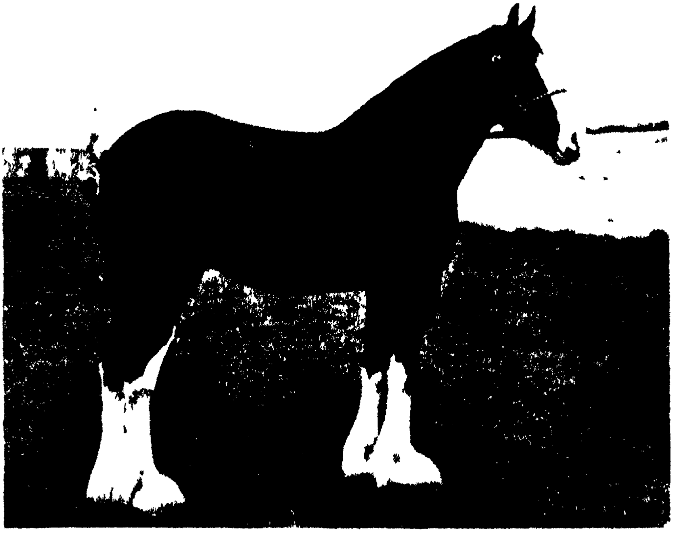

Fig. 67.—CLYDESDALE FILLY, "CRAIGIE LILY"

Winner of President's Medal for best Clydesdale Mare or Filly, Glasgow Show 192[illegible]. The property of Mr James Kilpatrick, Craigie Mains, Kilmarnock. Bred by Mr James Cairns, Abercrombie, St Monance. Age three years and two months.

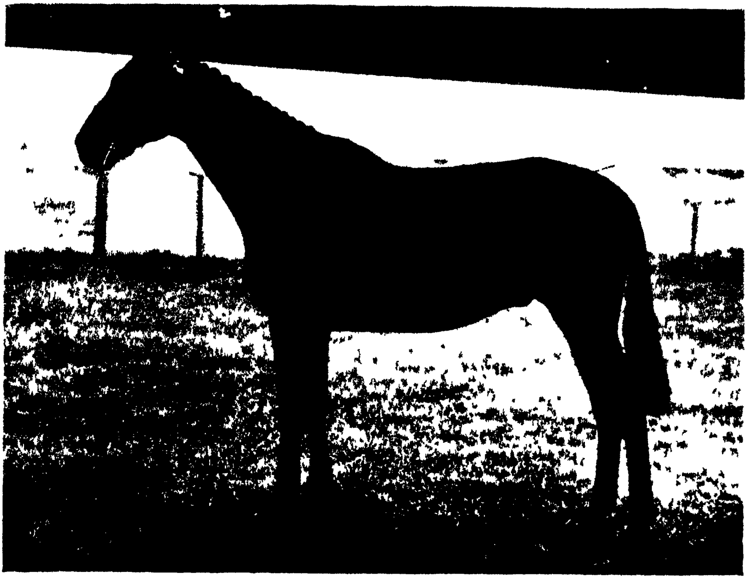

Fig. 68. HUNTER GELDING, "INDICATOR."

Winner of President's Medal for best Hunter, Glasgow Show 1925. The property of Major A. D. H[illegible] [illegible] [illegible]. Bred by Mr Frances R. Turner, Upper Nisbet, Ancrum. Age five years and [illegible] months.

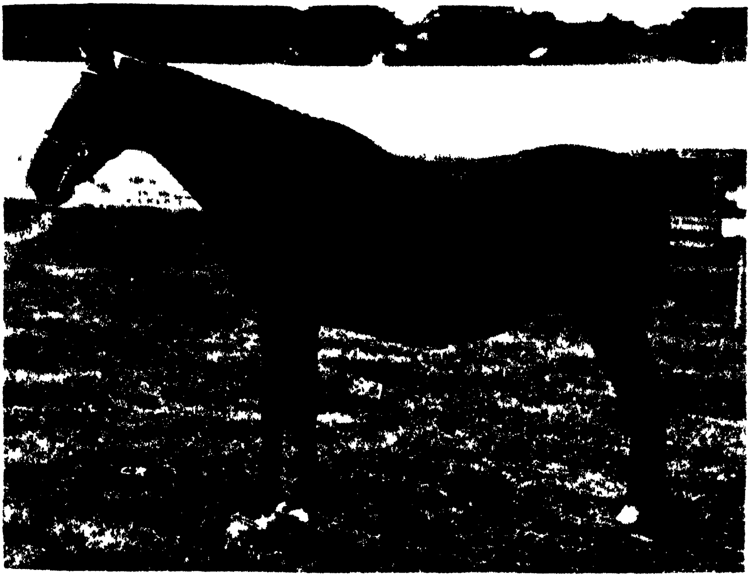

Fig. 69. HACKNEY MARE "TERRINGTON HOUSEMAID" 18,664.

Winner of President's Medal for best Hackney, Glasgow Show [illegible]. The property of Mr [illegible] Glen [illegible] Park, Bathgate. Bred by Sir Gilbert Greenall, Bart., Walton Hall, Warrington. Age twenty years.

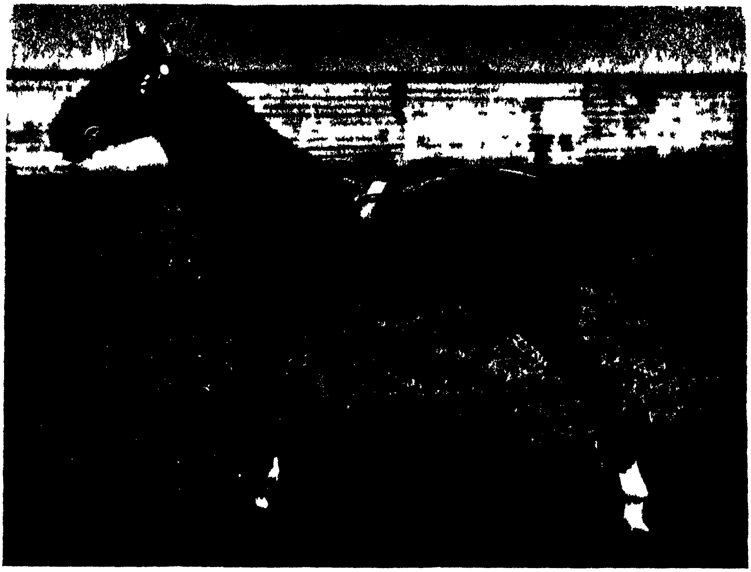

Fig 70.—Pony Stallion, "Highland Mansion" 14011

Winner of President's Medal for best Pony, Glasgow Show 192[illegible]. The property of Mr [illegible], [illegible] Kaim Park, Bathgate. Bred by Mr J. [illegible], [illegible] Hatton, Camilla Lacey, Dorking. Age three years.

Fig 71.—Highland Pony Mare, "Moira" 5090

Winner of President's Medal for best Highland Pony, Glasgow Show 192[illegible]. The property of Mr James M. Cairns, Ardlarach House, Luing, Oban. Bred by Mr A. Fraser, Pittentian, Crieff. Age four years and two months.

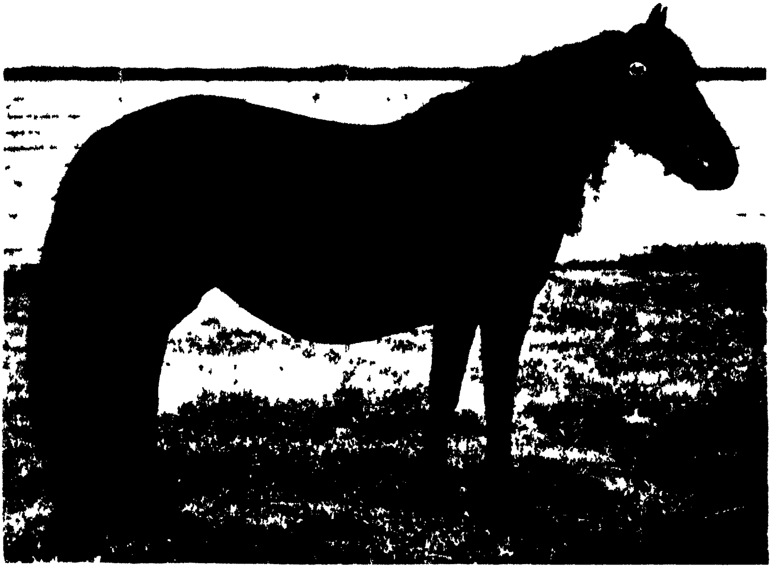

Fig 72 —Western Island Pony Mare, "Isle of Arran Bonnie Jean" 1408.

Winner of President's Medal for best Western Island Pony, Glasgow Show 1925 The property of Mr J Moncrieff Wright of Kinmonth Bridge of Earn Bred by H M The King, Balmoral Castle Age five years and two months

Fig 73 – Shetland Pony Stallion, "Dibblitz of Penniwells" 1087.

Winner of President's Medal for best Shetland Pony Glasgow Show, 1925 Bred by and the property of Mrs Etta Duffus, Penniwells, Elstree, Herts. Age five years and two months

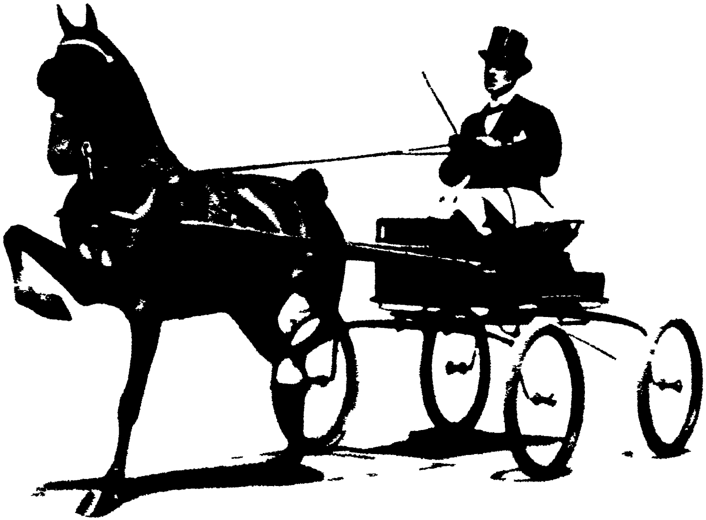

FIG. 71. GELDING IN HARNESS. [illegible]

[illegible]

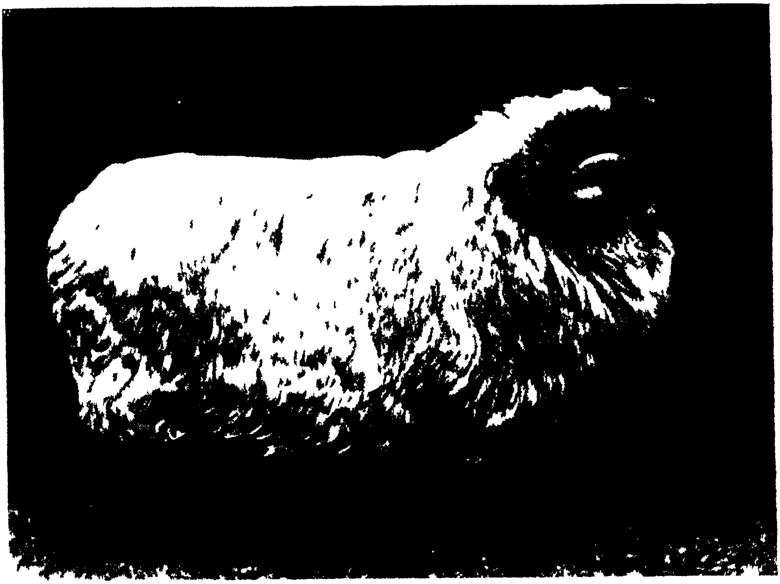

Fig. 7[illegible].—BLACKFACE SHEARLING TUP

s Medal for best Blackface, Glasgow Show, 192[illegible]. Bred by and the property
Mr Matthew G. Hamilton, Woolfords, Cobbinshaw.

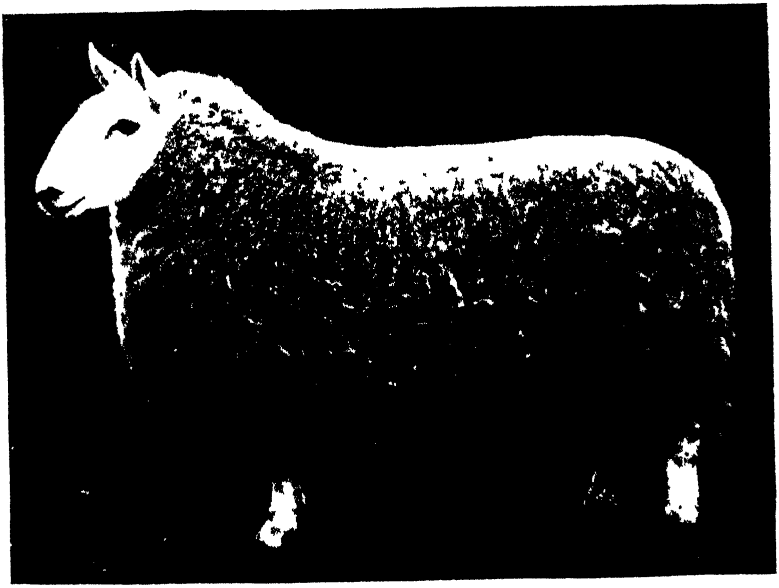

Fig. 76.—CHEVIOT SHEARLING EWE

Winner of President's Medal for best Cheviot, Glasgow Show, 192[illegible]. Bred by and the property
of Mr John Robson, Millknowe, Duns.

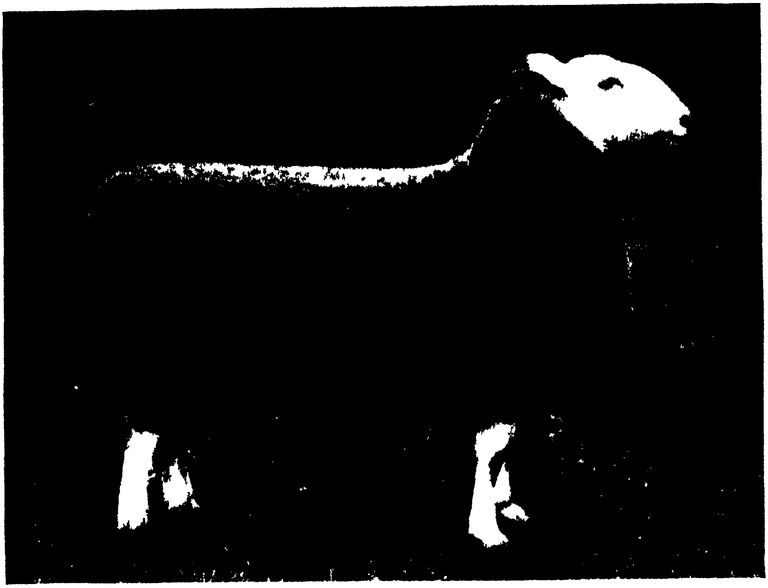

Fig. 77.—BORDER LEICESTER SHEARLING TUP.

Winner of President's Medal for best Border Leicester, Glasgow Show, [illegible]. Bred by and the property of Messrs [illegible] & W. B. Dickinson, Longcroft, Oxton, Berwickshire.

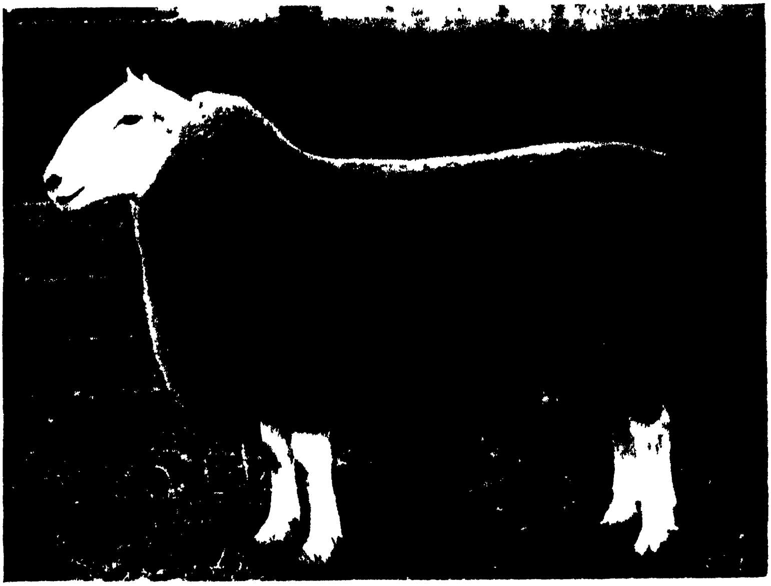

Fig. 78.—HALF-BRED SHEARLING TUP.

Winner of President's Medal for best **Half-bred**, Glasgow Show, [illegible]. Bred by and the property of Mr John **Elliot**, Blackhaugh, Clovenford.

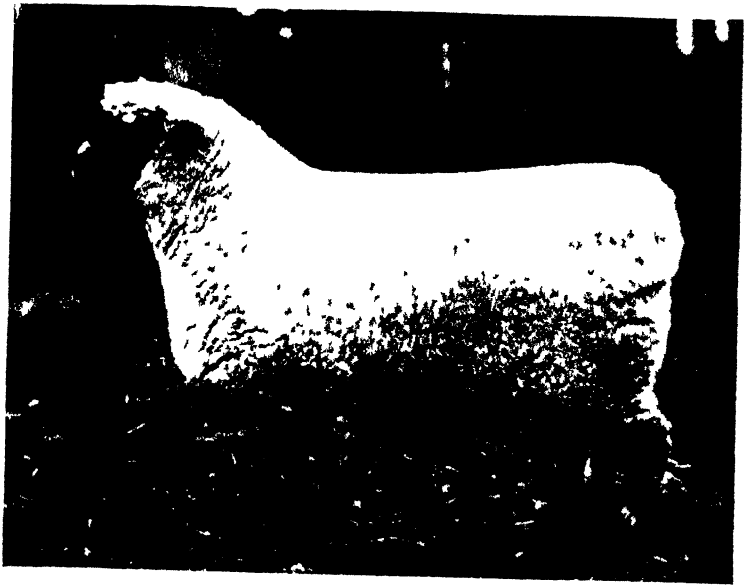

Fig. [illegible].—OXFORD DOWN SHEARLING TUP

Winner of the President's Medal for best Oxford Down, Glasgow Show, 19[illegible]. Bred by and the property of Messrs J. & M. [illegible], Sandyknowe, Kelso.

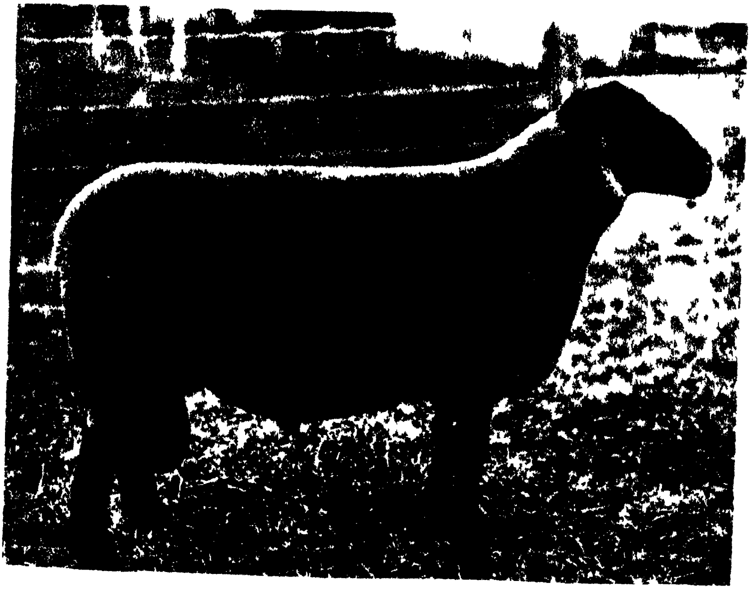

Fig. 80.—SUFFOLK TUP, "HAWK LACE" 17623

Winner of President's Medal for best Suffolk, Glasgow Show, 1925. The property of Mr John [illegible], [illegible], Dumfries. Bred by Messrs J. W. & F. D. [illegible], The Hull, [illegible], Essex. [illegible]

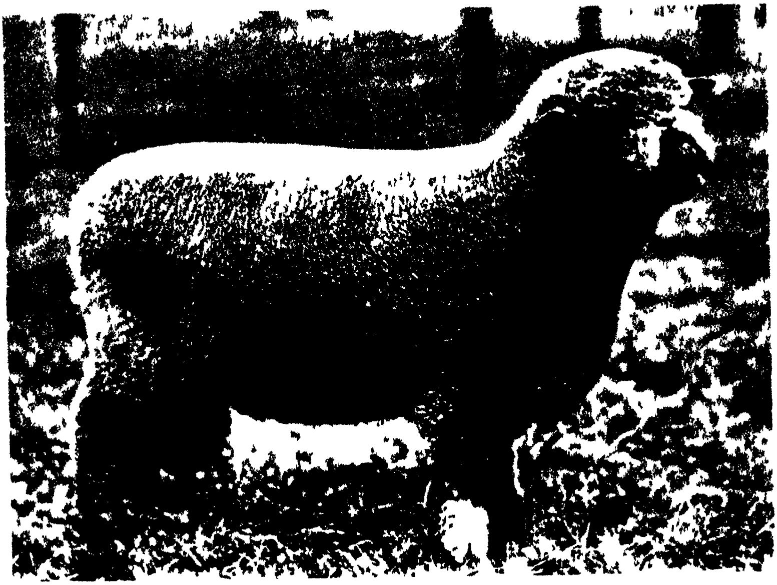

Fig. 81.—SHROPSHIRE SHEARLING TUP

Winner of President's Medal for best Shropshire, Glasgow Show [illegible]. Bred by and the property of Mr Thomas A. Buttar, Corston, Coupar Angus.

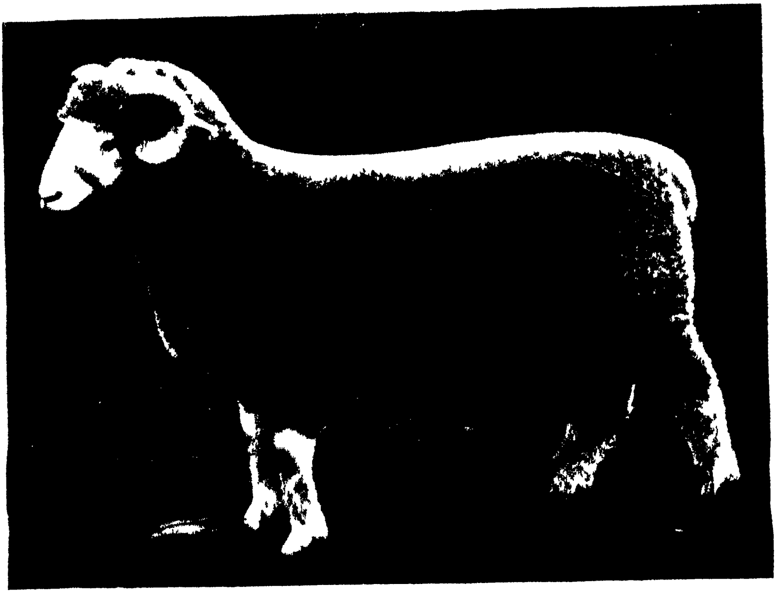

Fig. 82.—DORSET HORN TUP LAMB

Winner of President's Medal for best Dorset Horn, Glasgow Show, 1925. Bred by and the property of The Earl of Elgin and Kincardine, C.M.G., Broomhall, Dunfermline.

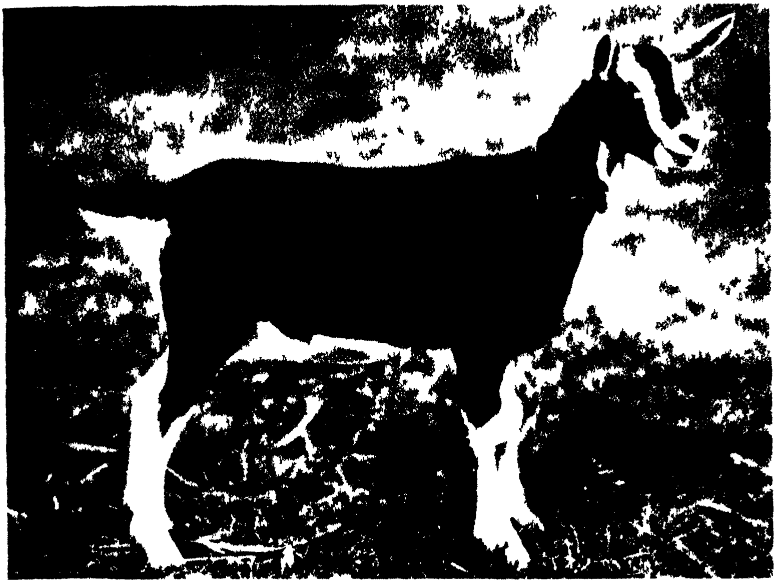

Fig. 8[illegible]—[illegible] Swi[illegible] Female Kid, [illegible] III [illegible]

Winner of [illegible] Medal for [illegible] Show 19[illegible]. Bred by and the property of [illegible]. Age [illegible] months.

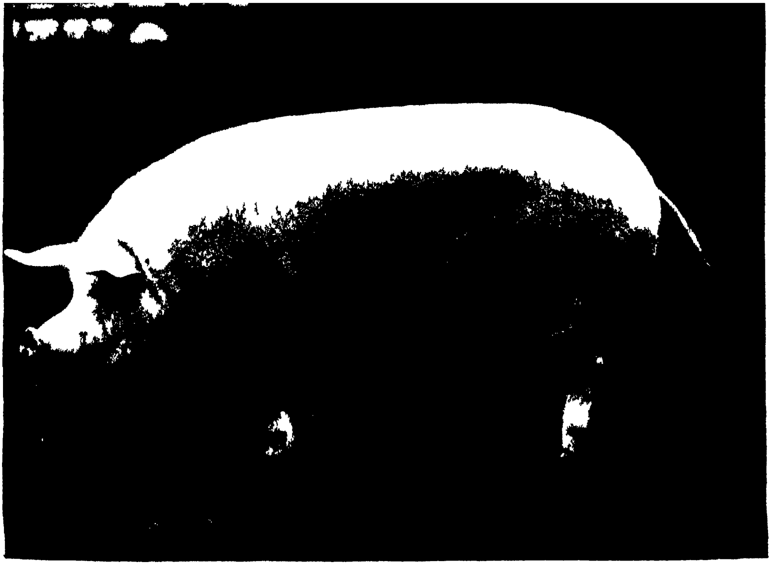

Fig. 81.—Large White Sow, 'Dalmeny Queen' 89,850

Winner of President's Medal for best Large White Pig, Glasgow Show 1925. Bred by and the property of the Earl of Rosebery, K.G., K.T., Dalmeny House, Edinburgh. Age three years and four months.

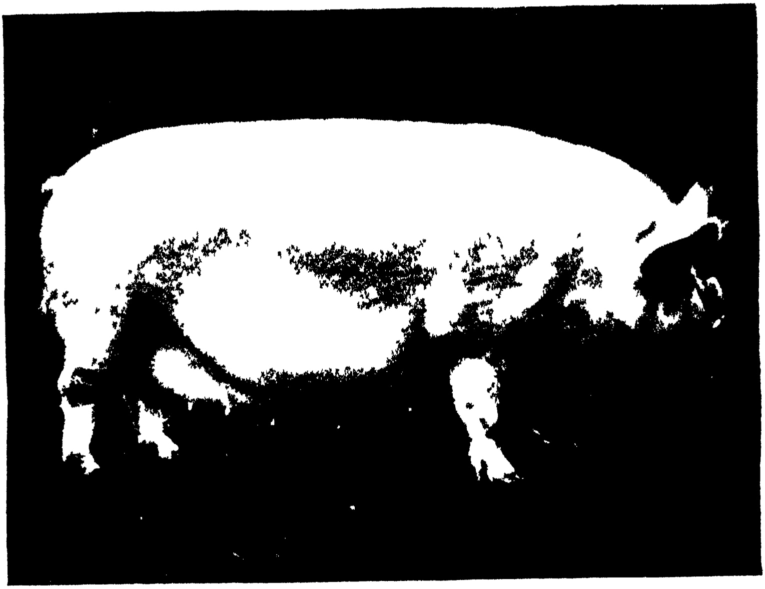

Fig. 85.—Middle White Sow, "Hawthorn Lady Holland 2nd" 116,906

Winner of President's Medal for best Middle White Pig, Glasgow Show, 192[illegible]. The property of Messrs Chivers & Sons Limited, Histon, Cambridge. Bred by the Hawthorn Herd Limited, The Hawthorns, Henley-on-Thames. Age two years and seven months.

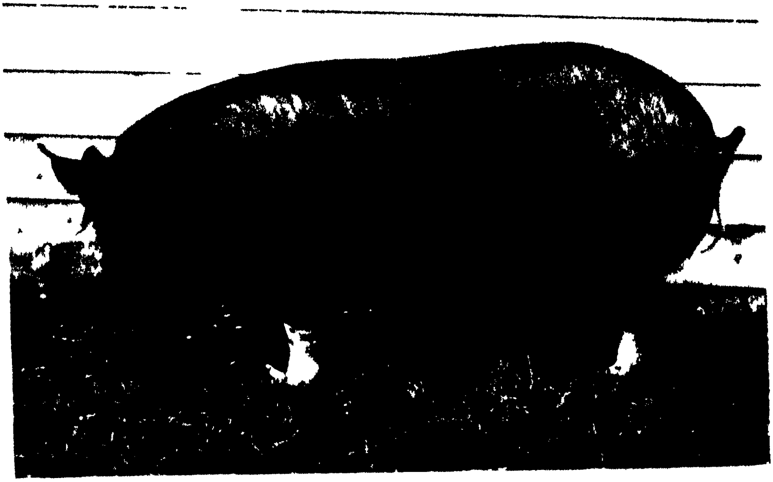

Fig. 86.—Berkshire Sow, "Thorntonhall Charming."

Winner of President's Medal for best Berkshire Pig, Glasgow Show, 1925. Bred by and the property of Mr A. Henderson Bishop, Thorntonhall Home Farm, Thorntonhall Station, Glasgow. Age one year and five months.

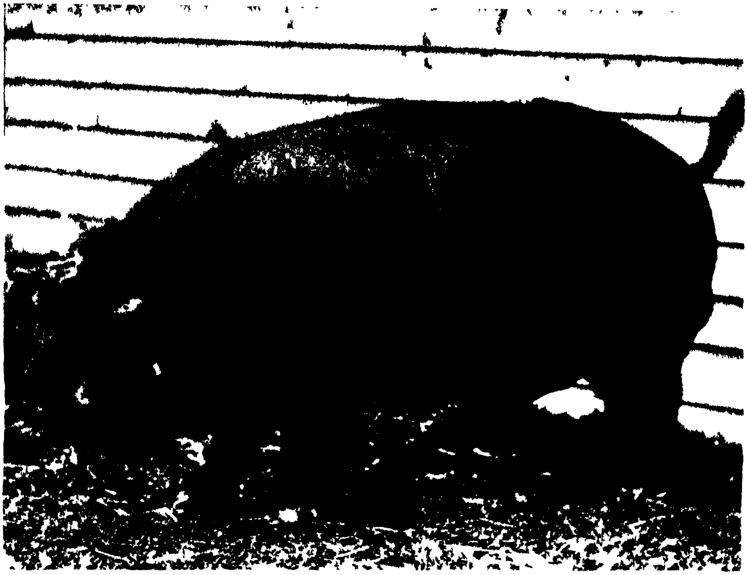

Fig 87 —Large Black Boar, 'Newacre Active 2nd' 26,805

Winner of President's Medal for best Large Black Pig Glasgow Show 1925 Bred by and the property of Mr John Bryce Duncan Newlands Dumfries Age three years

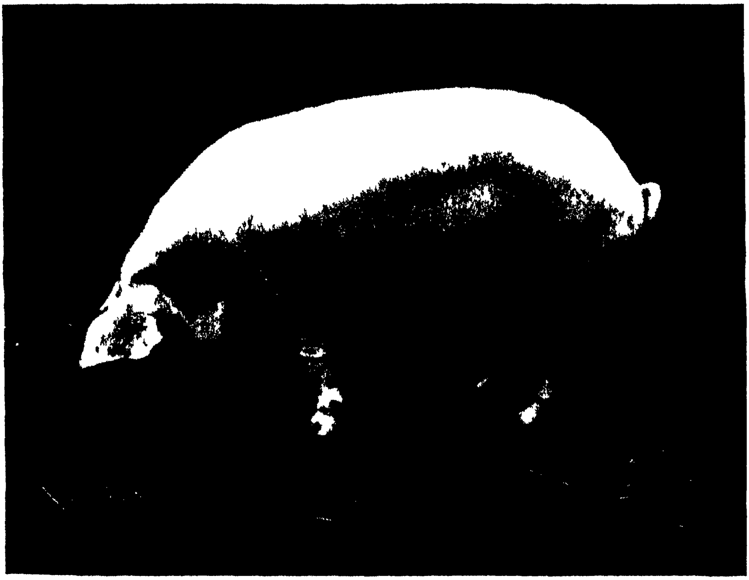

Fig 88 —Cumberland Boar, 'Bowston Financier' 5750

Winner of President's Medal for best Cumberland Pig Glasgow Show, 1925 Bred by and the property of Mr John S Jordan, Bowston, Kendal Age one year and six months

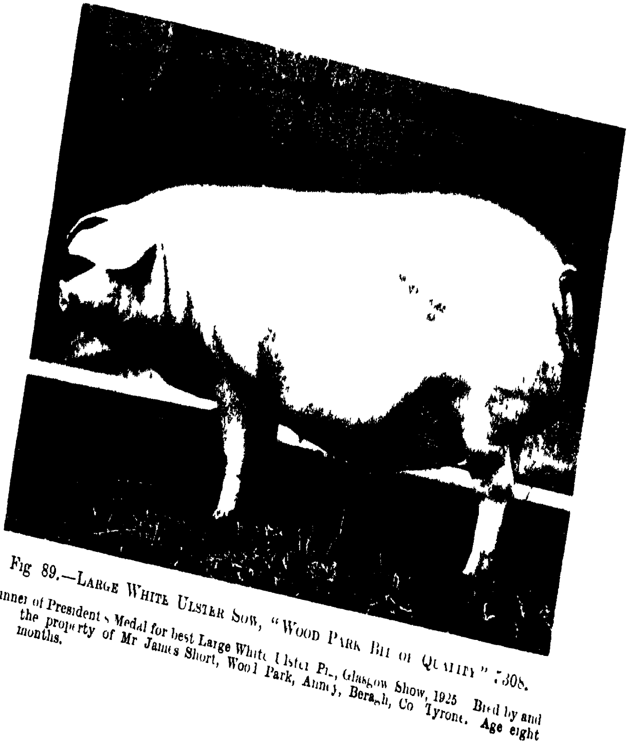

Fig 89.—LARGE WHITE ULSTER SOW, "WOOD PARK BIT OF QUALITY" 7308.

Winner of President's Medal for best Large White Ulster Pig, Glasgow Show, 1925 Bred by and the property of Mr James Short, Wood Park, Anney, Beragh, Co Tyrone. Age eight months.

PREMIUMS AWARDED BY THE SOCIETY IN 1925.

I.—GLASGOW SHOW,

14th, 15th, 16th, and 17th July, 1925.

ABBREVIATIONS—V., Very Highly Commended. H., Highly Commended. C., Commended.

CATTLE

SHORTHORN.

PRESIDENT'S CHAMPION MEDAL for Best Shorthorn.

No. 5 MacWilliam, W. S., Garbity, Orton Station, Morayshire, "Saltoun Jehu" (166,834).
Reserve—No. 84 Dalziel, George, Blairsgreen Farm, Kinneddar, Oakley, Fife, "Kinneddar Eliza."

Tweeddale Gold Medal for best Shorthorn Bull—Annual Free Income from fund of £500.

No. 5 MacWilliam, W. S, Garbity, Orton Station, Morayshire, "Saltoun Jehu" (166,834).

The Duthie Perpetual Challenge Cup, value £150, *for best animal in the Shorthorn Classes, "Extra Stock" being eligible to compete.* This Cup was gifted by the late Mr. William Duthie, Collynie.

No. 5 MacWilliam, W. S, Garbity, Orton Station, Morayshire, "Saltoun Jehu" (166,834).

Best Shorthorn Bull in the Show, entered or eligible for entry in Coates's Herd-Book—£20, given by the Shorthorn Society.

No. 5 MacWilliam, W. S, Garbity, Orton Station, Morayshire, "Saltoun Jehu" (166,834).

Silver Medal *to the Breeder of the winner of above Prize*—given by the Shorthorn Society.

No. 5 Fletcher, Captain A. M. Talbot, of Saltoun, Saltoun Hall, Pencaitland.

Breeder of best Bull of any age in Classes 1, 2, 3, 4, *and* 5—The Silver Medal.

No. 5 Fletcher, Captain A. M. Talbot, of Saltoun, Saltoun Hall, Pencaitland.

CLASS 1. BULL, born before 1st December, 1922.—Premiums, £15, £10, £5, and £3.

1st No. 5 MacWilliam, W. S., Garbity, Orton Station, Morayshire, "Saltoun Jehu" (166,834).
2nd No. 4 Law, Messrs, Mains of Sanquhar, Forres, "Sanquhar Fillibuster" (166,846).
3rd No. 6 Marshall, Albert James, Bridgebank, Stranraer, "Bridgebank Retrospect" (161,657).
4th No. 7 Moray, The Earl of, Doune Lodge, Doune, "Balcairn Guardsman" (160,949).
V No. 8 Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh, "Lothian Alert" (165,000).

CLASS 2. BULL, born on or after 1st December, 1922, and before 1st April, 1923.—Premiums, £15, £10, £5, and £3.

1st No. 12 Marshall, Albert James, Bridgebank, Stranraer, "Bridgebank Phœnix" (187,759).
2nd No. 10 Cathcart, Lady, Cluny Castle, Aberdeen, "Brawith Chieftain" (187,661).
3rd No. 11 Law, Messrs, Mains of Sanquhar, Forres, "Sanquhar Prince Charming" (193,880).
4th No. 9 Cameron, James, Balnakyle, Munlochy, "Woodend Lieutenant" (195,329).
V No. 13 Marshall, Albert James, Bridgebank, Stranraer, "Bridgebank Fairie Knight" (187,730).
H No. 14 Marshall, Albert James, Bridgebank, Stranraer, "Calrossie Clipper Comet" (188,123).

CLASS 3. BULL, born on or after 1st April, 1923, and not later than 30th November, 1923.—Premiums, £12, £8, £4, and £2.

1st No. 20 Marshall, Albert James, Bridgebank, Stranraer, "Obligation" (192,507).
2nd No. 16 Elder, Thomas, of Stevenson, Haddington, "Millhills Autocrat" (192,158).
3rd No. 19 Marshall, Albert James, Bridgebank, Stranraer, "Bridgebank Bard" (187,700).

CLASS 4. BULL, born on or after 1st December, 1923, and not later 31st March, 1924.—Premiums, £12, £8, £4, and £2.

1st No. 25 Heaton, John, Low Startforth Hall, Barnard Castle, "Startforth Loyalist."
2nd No. 30 Marshall, Albert James, Bridgebank, Stranraer, "Collynie Royal Leader" (188,656).
3rd No. 26 Keir & Cawder, Limited, Keir Home Farm, Dunblane, "Calrossie Rangefinder."
4th No. 23 Alexander & Addie, Newbiggin, Cambus, Stirling, "Cambus Envoy."
V No. 29 M'William, R. S., Garguston, Muir-of-Ord, "Waterloo Monarch."
H No. 32 Marshall, Albert James, Bridgebank, Stranraer, "Millhills Ronald."
C No. 33 Marshall, Albert James, Bridgebank, Stranraer, "Dunglass Roland."

CLASS 5.—BULL, born on or after 1st April, 1924.—Premiums, £10, £6, £4, and £2.

The Emilio R. Casares, jun., "Junior Champion Challenge Cup, value £50, *for the best Shorthorn Bull in Class* 5, *calved on or after* 1*st April of the year preceding the Show, that has passed the tuberculin test.* Given by Mr. Emilio R. Casares, jun., London.

No. 46 Middleton, F. A., Rosefarm, Cromarty, "Rosefarm Emblem."
Reserve—No. 39 Fletcher, Captain A. M. Talbot, of Saltoun, Saltoun Hall, Penoaitland, "Larbert Warrrior."

1st No. 46 Middleton, F. A., Rosefarm, Cromarty, "Rosefarm Emblem."
2nd No. 39 Fletcher, Captain A. M. Talbot, of Saltoun, Saltoun Hall, Pencaitland, "Larbert Warrior."
3rd No. 49 Wallace, Falconer L., of Candacraig and Balcairn, Old Meldrum, "Balcairn Beaver."
4th No. 37 Dykes, Thomas, Priestgill, Strathaven, "Avendale Broadhooks Baron F.3."
V No. 48 Stewart, Duncan M., Millhills, Crieff, "Millhills Rothes Mint."
H No. 40 Fletcher, Captain A. M. Talbot, of Saltoun, Saltoun Hall, Pencaitland, "Saltoun's Heir."
C No. 42 M'Allister, William, Drakies, Inverness, "Westside Loyalist."

Best Shorthorn Female in the Show, entered or eligible for entry in Coates's Herd-Book—£20, given by the Shorthorn Society.

No. 84 Dalziel, George, Blairsgreen Farm, Kinneddar, Oakley, Fife, "Kinneddar Eliza."

Silver Medal *to the Breeder of the winner of above Prize*—given by the Shorthorn Society.

No. 84 Dalziel, George, Blairsgreen Farm, Kinneddar, Oakley, Fife.

CLASS 6. COW, born before 1st December, 1922, in Milk.—Premiums, £12, £8, £4, and £2.

1st No. 53 Malcolm, William T., Whittingehame Mains, Prestonkirk, "Queen Pearl" (8432).
2nd No. 50 Fletcher, James Douglas, of Rosehaugh, Avoch, Ross shire, "Rosehaugh Clipper 5th" (36,350).
3rd No. 52 M'Laren, A. J., Milrig, Kirkliston, "Gateside Wimple" (33,721).

CLASS 7. COW or HEIFER, born on or after 1st December, 1922.—Premiums, £10, £5, £3, and £2.

1st No. 61 Lovat, General The Lord, K.T., Beaufort Castle, Beauly, Heifer, "Beaufort Lavender" (51,663).
2nd No. 56 Fletcher, Captain A. M. Talbot, of Saltoun, Saltoun Hall, Pencaitland, Heifer, "Saltoun Golden Drop 4th" (36,332).
3rd No. 55 His Majesty The King, The Royal Farms, Windsor, Heifer, "Windsor Carnation" (44,920).
4th No. 62 M'Allister, William, Drakies, Inverness, Cow, "Lady Kathleen Broadhooks" (49,175).
V No. 58 Fletcher, James Douglas, of Rosehaugh, Avoch, Ross-shire, Heifer, "Rosehaugh Broadhooks 10th" (48,677).
H No. 57 Fletcher, Captain A. M. Talbot, of Saltoun, Saltoun Hall, Pencaitland, Heifer, "Saltoun Bellona" (48,664).
C No. 65 Stewart, Duncan M., Millhills, Crieff, Heifer, "Millhills Missie 5th."

CLASS 8. HEIFER, born on or after 1st December, 1923, and not later than 31st March, 1924.—Premiums, £10, £5, £3, and £2.

1st No. 69 Crawford and Balcarres, The Earl of, K.T., Balcarres House, Colinsburgh, Fife, "Balcarres Judith" (47,369).
2nd No. 73 Greenwell, Sir Bernard E., Bart., Marden Park, Woldingham, Surrey, "Marden Crocus."
3rd No. 67 Alexander & Addie, Newbiggin, Cambus, Stirling, "Cambus Clara 3rd."
4th No. 71 Fletcher, Captain A. M. Talbot, of Saltoun, Saltoun Hall, Pencaitland, "Saltoun Claret Gem."
V No. 75 M'Allister, William, Drakies, Inverness, "Inverness Queen Rothes III."
H No. 77 Meikle, Robert W., Bearcrofts, Grangemouth, "Eliza 40th."
C No. 76 M'Laren, A. J., Milrig, Kirkliston, "Milrig Matilda" (39,517)

CLASS 9. HEIFER, born on or after 1st April, 1924.—Premiums, £10, £5, £3, and £2, given by Scottish Shorthorn Breeders' Association.

1st No. 84 Dalziel, George, Blairsgreen Farm, Kinneddar, Oakley, Fife, "Kinneddar Eliza."
2nd No. 92 Moray, The Earl of, Doune Lodge, Doune, "Doune Augusta 11th."
3rd No. 91 Jones, Messrs, Dunmore Park, Larbert, "Larbert Luxury."
4th No. 89 Heaton, John, Low Startforth Hall, Barnard Castle, "Startforth Augusta."
V No. 82 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Bantaskin Augusta 2nd."
H No. 81 Alexander & Addie, Newbiggin, Cambus, Stirling, "Cambus Kirkie."
C No. 83 Crawford and Balcarres, The Earl of, K.T., Balcarres House, Colinsburgh, Fife, "Balcarres Buttercup."
C No. 85 Finlayson, John, Orchard, Cambus, Stirling, "Orchard Duchess Broadhooks 4th."
C No. 88 Fletcher, James Douglas, of Rosehaugh, Avoch, Ross-shire, "Rosehaugh Millicent 14th."

ABERDEEN-ANGUS.

PRESIDENT'S CHAMPION MEDAL for best Aberdeen-Angus Animal.

No. 134 Kerr, J. E., of Harviestoun, Dollar, "Jeka Erica" (72,127).
Reserve—No. 106 Grant, Sir George MacPherson, Bart., The Castle, Ballindalloch, Banffshire, "Jorum of Ballindalloch" (43,920).

Ballindalloch Challenge Cup, value £50, *for the best Bull of any age in Classes* 10, 11, *and* 12, given by the late Sir George MacPherson Grant, Bart.

No. 100 Pattullo, J. H., Pitskelly, Carnoustie, "Pan of Philorth" (51,125).

Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.

No. 100 Lord Saltoun of Philorth, Philorth, Fraserburgh.

Breeder of best Bull of any age in Classes 10, 11, *and* 12—The Silver Medal.

No. 100 Lord Saltoun of Philorth, Philorth, Fraserburgh.

Champion Gold Medal *for best animal in the Breeding Classes, Breeding Animals shown as "Extra Stock" being eligible to compete*—given by the Aberdeen-Angus Cattle Society.

No. 134 Kerr, J. E., of Harviestoun, Dollar, "Jeka Erica" (72,127).

CLASS 10. BULL, born before 1st December, 1922.—Premiums, £15, £10, £5, and £3.

1st No. 100 Pattullo, J. H., Pitskelly, Carnoustie, "Pan of Philorth" (51,125).
2nd No. 104 Reid, Andrew Thomson, of Auchterarder House, Auchterarder, "Black Idol" (45,093).
3rd No. 96 Allendale, Viscount, Dilston, Corbridge-on-Tyne, "Electricity of Bywell" (52,341).
4th No. 102 Philip, John, Dandaleith, Craigellachie, "Earl Esco of Ballindalloch" (50,034).
V No. 98 Howison, A. W., Lochbank, Blairgowrie, "Peribos" (53,320).
H No. 97 Booth, James C., Downiehills, Peterhead, "Glorious of Ballindalloch" (46,005).
C No. 99 Macbeth, W. G., Dunira, Comrie, "Escalad of Bleaton" (48,058).

EXTRA STOCK.

The following was awarded the Silver Medal—

No. 106 Grant, Sir George MacPherson, Bart., The Castle, Ballindalloch, Banffshire, "Jorum of Ballindalloch" (43,920).

CLASS 11. BULL, born on or after 1st December, 1922.—Premiums, £15, £10, £5, and £3.

1st No. 111 Robertson, Peter D., Castlecraig, Nigg, Ross-shire, "Jupiter of Castlecraig" (55,161).
2nd No. 107 Cumming, J. F., O.B.E., Kinermony Farm, Aberlour, Banffshire, "Erdon of Bleaton" (54,596).
3rd No. 109 M'Conachie, George, Ardoch, Deskford, Cullen, "Eviction of Harviestoun" (54,801).
4th No. 108 Drybrough, W. S., Cults Mill, Pitlessie, Ladybank, Fife, "Page of Duthil" (55,413).
V No. 110 Murray, Thomas, & Sons, Laigh Grange, Maybole, Ayrshire, "Evalder of Ballindalloch" (54,746).

CLASS 12. BULL, born on or after 1st December, 1923.—Premiums, £12, £8, £4, and £2.

1st No. 114 Allendale, Viscount, Dilston, Corbridge-on-Tyne, "Grandee of Bywell" (57,159).
2nd No. 120 Scott, C. T., Buckland Manor, Broadway, Worcestershire, "Black George 2nd of Buckland" (56,220).
3rd No. 117 Duncan, John Bryce, Newlands, Dumfries, "Tony of Newlands" (58,139).
4th No. 118 Marshall & Mitchell, Bleaton, Blairgowrie, "Elphin of Bleaton" (56,698).
V No. 115 Cran, George, Morlich, Glenkindie, Aberdeen, "Ewell of Morlich" (57,017).

Ballindalloch Challenge Cup, value £50, *for the best Cow of any age in Classes* 13, 14, *and* 15, given by the late Sir John MacPherson Grant, Bart.

No. 134 Kerr, J. E., of Harviestoun, Dollar, "Jeka Erica" (72,127).

Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.

No. 134 Kerr, J. E., of Harviestoun, Dollar.

CLASS 13. COW, in Milk, born before 1st December, 1921.—Premiums, £12, £8, £4, and £2.

1st No. 127 Shiach, Gordon R., of Rosebrae, Elgin, "Evergreen of Rosebrae" (70,532).
2nd No. 123 Kennedy, Lieut.-Colonel Norman, D.S.O., of Doonholm, Ayr, "Indora of Doonholm" (69,855).
3rd No. 129 Wallace, Falconer L., of Candacraig and Balcairn, Old Meldrum, "Bedraggled Maid of Ballindalloch" (64,729).
4th No. 130 Wilson, Walter, Inchgower, Buckie, "Beaver Maid" (68,529).
V No. 126 Scott, William, Aldbar Home Farm, Brechin, "Gessato 2nd" (66,627).
H No. 124 Macbeth, W. G., Dunira, Comrie, "Eva 6th of Ballindalloch" (64,737).
C No. 121 Duncan, John Bryce, Newlands, Dumfries, "Pearl of Newlands" (69,287).
C No. 128 Stewart, Sir R. K., K.B.E., Murdostoun, Newmains, "Idyle" (69,325).
C No. 122 Findlay, Sir John R., Bart., K.B.E., of Aberlour, Aberlour, Banffshire, "Evening Eclade of Ballindalloch" (69,560).

EXTRA STOCK.

The following was awarded the Silver Medal—

1st No 131 Booth, James C., Downiehills, Peterhead, "Erica of Downiehills" (57,775).

CLASS 14. COW, in Milk, born on or after 1st December, 1921.—Premiums, £12, £8, £4, and £2.

1st No. 134 Kerr, J. E., of Harviestoun, Dollar, "Jeka Erica" (72,127).
2nd No. 140 Wilson, Walter, Inchgower, Buckie, "Elemi 3rd" (73,237).
3rd No. 133 Kennedy, Lieut.-Colonel Norman, D.S.O., of Doonholm, Ayr, "Melody of Doonholm" (72,119).
4th No. 132 Findlay, Sir John R., Bart., K.B.E., of Aberlour, Aberlour, Banffshire, "Epira" (71,634).
V No. 137 Rae, John, N., Mounthooly, Rosehearty, "Eventful Erica" (72,609).
H No. 138 Scott, C. T., Buckland Manor, Broadway, Worcestershire, "Elluma 2nd of Buckland" (72,814).
C No. 139 Stewart, Sir R. K., K.B.E., Murdostoun, Newmains, "Black Bunty" (72,721).
C No. 136 Macbeth, W. G., Dunira, Comrie, "Pride of Dunira" (72,200).

CLASS 15. COW or HEIFER, born on or after 1st December, 1922.—Premiums, £10, £5, £3, and £2.

1st No. 142 Grant, Sir George MacPherson, Bart., The Castle, Ballindalloch, Banffshire, Heifer, "Evelutia of Ballindalloch" (74,155).
2nd No. 146 Kennedy, Lieut.-Colonel Norman, D.S.O., of Doonholm, Ayr, Heifer, "Bignonia of Doonholm" (74,403).
3rd No. 143 Grant, Sir George MacPherson, Bart., The Castle, Ballindalloch, Banffshire, Heifer, "Evexina of Ballindalloch" (74,159).
4th No. 147 Kerr, J. E., of Harviestoun, Dollar, Heifer, "Jeana Erica" (74,423).
V No. 151 Scott, William, Aldbar Home Farm, Brechin, Heifer, "Joyade of Dundas" (73,701).
H No. 152 Scott, William, Aldbar Home Farm, Brechin, Heifer, "Pandora of Aldbar" (75,139).
C No. 144 Houldsworth, James Hamilton, Dallas Lodge, Dallas, Forres, Heifer, "Belinda of Dallas" (74,316).
C No. 141 Duncan, Commander J. A., Maguugie, Arbroath, Heifer, "Katharine of Parkhill" (73,919).
C No. 153 Stewart, Sir R. K., K.B.E., Murdostoun, Newmains, Heifer, "Patience" (75,193).

CLASS 16. HEIFER, born on or after 1st December, 1923, and before 1st March, 1924.—Premiums, £10, £5, £3, and £2.

1st No. 165 Kerr, J. E., of Harviestoun, Dollar, "Evelett of Harviestoun" (76,631).
2nd No. 167 Mackay, Charles, Balnastraid, Carr Bridge, Inverness-shire, "Black Bessie" (77,208).
3rd No. 164 Kennedy, Lieut.-Colonel Norman, D.S.O., of Doonholm, Ayr, "Elmina of Doonholm" (76,615).
4th No. 156 Cumming, J. F., O.B.E., Kinermony Farm, Aberlour, Banffshire, "Pride of Society" (75,647).
V No. 170 Shiach, Gordon R., of Rosebrae, Elgin, "Pride of Mallorca" (77,365).
H No. 163 Howison, A. W., Lochbank, Blairgowrie, "Gem of Lochbank" (76,545).
C No. 169 Pattullo, J. H. Pitskelly, Carnoustie, "Bell Burgess of Pitskelly" (77,027).
C No. 157 Cumming, J. F., O.B.E., Kinermony Farm, Aberlour, Banffshire, "Pure Pride of Ballintomb."

CLASS 17. HEIFER, born on or after 1st March, 1924.—
Premiums, £10, £5, £3, and £2.

1st No. 174 Kennedy, Lieut.-Colonel Norman, D.S.O., of Doonholm, Ayr, "Medusa of Doonholm" (76,620).
2nd No. 177 Reid, Andrew Thomson, of Auchterarder House, Auchterarder, "Girandola of Auchterarder" (77,157).
3rd No. 172 Allan, John M., Easter Duthil, Carr Bridge, Strathspey, "Esme of Duthil" (75,651).
4th No. 173 Donaldson, Norman P., Ballindalloch, Balfron, "Parona of Auchterarder" (77,158).
V No. 176 Murray, Thomas, & Sons, Laigh Grange, Maybole, Ayrshire, "Bantering Maid of Laigh Grange" (76,976).
H No. 180 Wilson, Walter, Inchgower, Buckie, "Pride of Morven" (77,780).
C No. 179 Stewart, Sir R. K., K.B.E., Murdostoun, Newmains, "Black Pridella" (77,154).
C No. 178 Scott, C. T., Buckland Manor, Broadway, Worcestershire, "Evergreen 3rd of Buckland" (77,328).

GALLOWAY.

PRESIDENT'S CHAMPION MEDAL for best Galloway.

No. 190 Drynan, John, Knockiebay, New Luce, "Tarbreoch Doris 17th" (27,476).
Reserve—No. 198 Drynan, John, Knockiebay, New Luce, Heifer, "Princess Pauline" (29,659).

Dr. Gillespie Memorial Challenge Trophy, value £50, *for best Galloway Animal registered in the Galloway Herd-Book, entered in any of the Breeding Classes, Breeding Animals shown as "Extra Stock" being eligible to compete*—given by the Galloway Cattle Society of Great Britain and Ireland.

No. 190 Drynan, John, Knockiebay, New Luce, "Tarbreoch Doris 17th" (27,476).

Breeder of best Bull of any age in Classes 18, 19, *and* 20—The Silver Medal.
No. 182 D. & J. Little, Whitehill, Lockerbie.

CLASS 18. BULL, born before 1st December, 1922.—
Premiums, £15, £10, £5, and £3.

1st No. 182 Buchanan-Jardine, Sir R. W., Bart., Castlemilk, Lockerbie, "Warbond II. of Corriehalls" (14,837).
2nd No. 183 Fraser, John, Barmark, Corsock, Dalbeattie, "Barmark Clansman" (14,135).

CLASS 19. BULL, born on or after 1st December, 1922.—
Premiums, £15, £10, £5, and £3.

1st No. 184 Biggar, Walter, Grange Farm, Dalbeattie, "Sable" (15,444).

CLASS 20. BULL, born on or after 1st December, 1923.—
Premiums, £12, £8, £4, and £2.

1st No. 187 Graham, Robert, Chapel of Logan, Canonbie, "Jovial of Barnsoul" (15,593).
2nd No. 185 Buchanan-Jardine, Sir R. W., Bart., Castlemilk, Lockerbie, "Aviator II. of Castlemilk" (15,612).
3rd No. 186 Fraser, John, Barmark, Corsock, Dalbeattie, "Cuthbert of Auchineden."

CLASS 21. COW, of any age, in Milk.—Premiums, £12, £8, £4, and £2.

1st No. 190 Drynan, John, Knockiebay, New Luce, "Tarbreoch Doris 17th" (27,476).
2nd No. 191 Fraser, John, Barmark, Corsock, Dalbeattie, "Barmark Nerissa" (27,549).
3rd No. 189 Buchanan-Jardine, Sir R. W., Bart., Castlemilk, Lockerbie, "Lizzie of Castlemilk" (28,127).
4th No. 192 Graham, Robert, Chapel of Logan, Canonbie, "May Queen of Logan" (28,083).
V No. 193 Paterson, Robert Jardine, Balgray Home Farm, Lockerbie, "Joan 6th of Scroggiehall" (28,801).

CLASS 22. COW or HEIFER, born on or after 1st December, 1922.—Premiums, £10, £5, £3, and £2.

1st No. 198 Drynan, John, Knockiebay, New Luce, Heifer, "Princess Pauline" (29,659).
2nd No. 201 Little, D. & J., Whitehill, Lockerbie, Heifer, "Grand Dora 4th" (29,175).
3rd No. 196 Donaldson, William Betts, Auchineden, Blanefield, Stirlingshire, Heifer, "Clare of Auchineden" (29,019).
4th No. 199 Graham, Robert, Chapel of Logan, Canonbie, Heifer, "Gratitude 9th" (29,087).
V No. 203 Paterson, Robert Jardine, Balgray Home Farm, Lockerbie, Heifer, "Queen of Stepford" (28,952).
H No. 202 Paterson, Robert Jardine, Balgray Home Farm, Lockerbie, Heifer, "Molly 3rd of Barnsoul" (29,098).
C No. 195 Buchanan-Jardine, Sir R. W., Bart., Castlemilk, Lockerbie, Heifer, "Ivy of Mossknowe" (28,896).

CLASS 23. HEIFER, born on or after 1st December, 1923.—Premiums, £10, £5, £3, and £2.

1st No. 209 Donaldson, William Betts, Auchineden, Blanefield, Stirlingshire, "Ellora of Auchineden" (29,654).
2nd No. 210 Donaldson, William Betts, Auchineden, Blanefield, Stirlingshire, "Zola of Auchineden" (29,653).
3rd No. 213 Graham, Robert, Chapel of Logan, Canonbie, "Logan Lady 14th" (29,713).
4th No. 215 Paterson, Robert Jardine, Balgray Home Farm, Lockerbie, "Diamond 2nd of Barnsoul" (29,727).
V No. 214 Little, D. & J., Whitehill, Lockerbie, "Joyce of Whitehill" (29,811).
H No. 208 Donaldson, William Betts, Auchineden, Blanefield, Stirlingshire, "Victoria of Auchineden" (29,650).
C No. 211 Fraser, John, Barmark, Corsock, Dalbeattie, "Barmark Princess" (29,683).

BELTED GALLOWAY.

PRESIDENT'S CHAMPION MEDAL for Best Belted Galloway Animal.

No. 232 Brown, J. Douglas, Knockbrex, Kirkcudbright, Cow, "Knockbrex Lady Belinda" (175 B).
Reserve.—No. 218 Brown, J. Douglas, Knockbrex, Kirkcudbright, "Knockbrex Pollux" (49 B).

Knockbrex Challenge Cup, value £50, *for the best Belted Galloway Animal, "Extra Stock" being eligible to compete.* This Cup is offered by Mrs. Brown of Knockbrex for the best Belted Galloway animal registered in the Dun and Belted Galloway Cattle Breeders' Association Herd-Book, entered in any of the breeding classes, at the Show or Shows at which it may be competed for.

No. 232 Brown, J. Douglas, Knockbrex, Kirkcudbright, Cow, "Knockbrex Lady Belinda" (175 B).

CLASS 24. BULL, born before 1st December, 1923.—Premiums, £8, £4, and £2.

1st No. 218 Brown, J. Douglas, Knockbrex, Kirkcudbright, "Knockbrex Pollux" (49 B).
2nd No. 219 Bute, The Marquis of, K.T., Craigeach, Kirkcowan, "Mochrum Royal Record" (61 B).
3rd No. 221 Service, William, Mindork, Kirkcowan, "Mindork Admiral" (58 B).
V No. 220 Cayzer, Lieut.-Commander Sir A. B. T., Bart., R.N., Gartmore House, Gartmore, Stirling, "Mark Hector" (56 B).

CLASS 25. BULL, born on or after 1st December, 1923.—Premiums, £8, £4, and £2.

1st No. 224 Hamilton, General Sir Ian, Lullenden Farm, East Grinstead, "Lullenden Douglas."
2nd No. 223 Cayzer, Lieut.-Commander Sir A. B. T., Bart., R.N., Gartmore House, Gartmore, Stirling, "Gartmore Vyking III."
3rd No. 222 Brown, J. Douglas, Knockbrex, Kirkcudbright, "Beau Brummel."

CLASS 26. COW or HEIFER, born before 1st December, 1922, in Milk or in Calf; if in Calf, to calve on or before 1st December of the year of the Show.—Premiums, £8, £4, and £2.

1st No. 227 Bell-Irving, James Jardine, Makerstoun, Kelso, Heifer, "Makerstoun Ivy" (361 B).
2nd No. 228 Brown, J. Douglas, Knockbrex, Kirkcudbright, Cow, "Knockbrex Pansy" (183 B (D)).
3rd No. 225 Bell-Irving, James Jardine, Makerstoun, Kelso, Cow, "Makerstoun Romance" (199 B).
V No. 230 Hamilton, General Sir Ian, Lullenden Farm, East Grinstead, Cow, "Allington Dandelion" (118 B).
C No. 226 Bell-Irving, James Jardine, Makerstoun, Kelso, Heifer, "Makerstoun Eva II." (359 B).

EXTRA STOCK.

The following was awarded the Silver Medal—

No. 232 Brown, J. Douglas, Knockbrex, Kirkcudbright, Cow, "Knockbrex Lady Belinda" (175 B).

CLASS 27. HEIFER, born on or after 1st December, 1922.—Premiums, £8, £4, and £2.

1st No. 233 Alexander, J. W., Newton, Moffat, "Newton Nancy" (401 B).
2nd No. 234 Brown, J. Douglas, Knockbrex, Kirkcudbright, "Knockbrex Adelaide" (339 B).
3rd No. 235 Brown, J. Douglas, Knockbrex, Kirkcudbright "Knockbrex Ada" (338 B).
V No. 237 Hamilton, General Sir Ian, Lullenden Farm, East Grinstead, "Lullenden Queenie" (415 B).

CLASS 28. HEIFER, born on or after 1st December, 1923.—Premiums, £8, £4, and £2.

1st No. 239 Brown, J. Douglas, Knockbrex, Kirkcudbright, "Knockbrex Augusta" (343 B).
2nd No. 241 Cayzer, Lieut.-Commander Sir A. B. T., Bart., R.N., Gartmore House, Gartmore, Stirling, "Gartmore Brenda I."
3rd No. 240 Brown, J. Douglas, Knockbrex, Kirkcudbright, "Knockbrex Beryl."
V No. 242 Cayzer, Lieut.-Commander Sir A. B. T., Bart., R.N., Gartmore House, Gartmore. Stirling, "Gartmore Lily I."

HIGHLAND.

PRESIDENT'S CHAMPION MEDAL for best Highland Animal.

No. 260 Southesk, The Earl of, Kinnaird Castle, Brechin, "Princess Caroline II." (9400).
Reserve—No. 248 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, "Maor Riabhach of Atholl."

Renfrewshire Perpetual Gold Challenge Cup, value £250, *for best Highland Animal, "Extra Stock" being eligible to compete.* This Cup, along with an endowment of £500, was provided from money collected in Renfrewshire by the late Provost Muir MacKean of Paisley, and is in commemoration of the Society's first Show in the county of Renfrew in 1913.

No. 260 Southesk, The Earl of, Kinnaird Castle, Brechin, "Princess Caroline II." (9400).
Reserve—No. 248 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, "Maor Riabhach of Atholl."

Perpetual Victory Challenge Cup, approximate value 50 Guineas, *for the best animal in the Male Classes, "Extra Stock" being eligible to compete*—given by the Highland Cattle Society of Scotland.

No. 248 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, "Maor Riabhach of Atholl."

Breeder of best Bull of any age in Classes 29, 30, *and* 31—The Silver Medal.

No. 248 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl.

CLASS 29. BULL, born before 1923.—Premiums, £15, £10, £5, and £3.

1st No. 246 Southesk, The Earl of, Kinnaird Castle, Brechin, "Carrington IV."
2nd No. 243 Invernairn, Lord, Strathnairn, Flichity, Inverness, "Iarla Buidhe of Atholl."
3rd No. 245 Maze, Mrs M., of Achnacloich, Connel, Argyll, "Royal Ernest."
4th No. 244 M'Douall, A. K., of Logan, Stranraer, "An Coirneal Buidhe of Logan."

CLASS 30. BULL, born in 1923.—Premiums, £15, £10, £5, and £3.

1st No. 247 Invernairn, Lord, Strathnairn, Flichity, Inverness, "Calum Roineach of Flichity."

CLASS 31. BULL, born in 1924.—Premiums, £12, £8, £4, and £2.

1st No. 248 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, "Maor Riabhach of Atholl."
2nd No. 254 Maitland, Brig.-General James Dalgleish Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, "An-t-uramach of Errol."
3rd No. 255 Turner, Lily C., Kilchamaig, Whitehouse, Argyllshire, "Seumas Bhuidhe of Kilchamaig."
4th No. 249 Graham, The Marquis of, C.B., Brodick Castle, Brodick, Isle of Arran, "Ossian II. of Southesk."
V No. 253 M'Douall, A. K., of Logan, Stranraer, "Ian Buidhe of Logan."
H No. 252 M'Douall, A. K., of Logan, Stranraer, "Waverley of Logan."
C No. 251 Invernairn, Lord, Strathnairn, Flichity, Inverness, "Prionnsa of Flichity."

Perpetual Victory Challenge Cup, approximate value 35 Guineas, *for the best animal in the Female Classes, "Extra Stock" being eligible to compete*—given by the Highland Cattle Society of Scotland.

No. 260 Southesk, The Earl of, Kinnaird Castle, Brechin, "Princess Caroline II." (9400).

CLASS 32. COW, of any age, in Milk.—Premiums, £12, £8, £4, and £2.

1st No. 260 Southesk, The Earl of, Kinnaird Castle, Brechin, "Princess Caroline II." (9400).
2nd No. 258 Maitland, Brig.-General James Dalgleish Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, "Shuna of Errol."
3rd No. 256 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, "Donnag Riabhach XII. of Atholl" (8780).
4th No. 259 Southesk, The Earl of, Kinnaird Castle, Brechin, "Corrina IV." (9401).
V No. 261 Turner, Lily C., Kilchamaig, Whitehouse, Argyllshire, "Rosy X."
H No. 257 Maitland, Brig.-General James Dalgleish Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, "Fuinary Queen of Errol."

CLASS 33. COW or HEIFER, born in 1922.—Premiums, £10, £5, £3, and £2.

1st No. 267 Maitland, Brig.-General James Dalgleish Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, Heifer, "Fuinary Princess of Errol."
2nd No. 263 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, Heifer, "Bean Bhan XII. of Atholl."
3rd No. 268 Southesk, The Earl of, Kinnaird Castle, Brechin, Heifer, "Princess Caroline V."
4th No. 266 Mackenzie, W. D., of Farr, House of Farr, Inverness, Heifer, "Bean a' Bhaile II."
V No. 264 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, Heifer, "Te Riabhach XXII. of Atholl."
H No. 265 Mackenzie, W. D., of Farr, House of Farr, Inverness, Heifer, "Seonaid III."

CLASS 34. HEIFER, born in 1923.—Premiums, £10, £5, £3, and £2.

1st No. 270 Southesk, The Earl of, Kinnaird Castle, Brechin, "Sidonia VII."
2nd No. 269 Southesk, The Earl of, Kinnaird Castle, Brechin, "Princess Caroline VI."
3rd No. 271 Southesk, The Earl of, Kinnaird Castle, Brechin, "Princess Maura X."

DAIRY SHORTHORN.

PRESIDENT'S CHAMPION MEDAL for best Dairy Shorthorn.

(Insufficient entries.)

CLASS 35. DAIRY SHORTHORN COW, in Milk, born in or before 1921, eligible for and entered in Coates's Herd-Book, or pedigree sent for such entry previous to the Show.—Premiums, £10, £5, £3, and £2; First Prize given by the Shorthorn Society.

Silver Medal *to the Breeder of the winner of the First Prize*—given by the Shorthorn Society.

(Insufficient entries.)

CLASS 36. DAIRY SHORTHORN COW [or HEIFER], in Milk, born in or after 1922, eligible for and entered in Coates's Herd-Book, or pedigree sent for such entry previous to the Show.—Premiums, £10, £5, £3, and £2; First Prize given by the Shorthorn Society.

Silver Medal *to the Breeder of the winner of the First Prize*—given by the Shorthorn Society.

(Insufficient entries.)

CLASS 37. DAIRY SHORTHORN BULL, born in 1924, entered or pedigree accepted for entry in Coates's Herd-Book. No Bull is eligible to compete unless registered or accepted for registration in the Year-Book of the Dairy Shorthorn Association.—Premiums, £10, £5, £3, and £2; First and Second Prizes given by the Dairy Shorthorn Association.

(Insufficient entries.)

AYRSHIRE.

CONDITIONS.

1. To be eligible for competition in the Ayrshire Classes cows must have an authenticated milk yield, and younger females and bulls an authenticated milking pedigree of a definite minimum amount.
2. The minimum amount referred to shall be as follows, calculated on the basis of a period between calvings of 52 weeks, and 3.8 per cent. of butter fat :—
   (*a*) Cows which have completed two or more lactations—700 gallons.
   (*b*) Cows which have completed only one lactation—600 gallons.
   (*c*) Younger females and bulls—an authenticated milking pedigree for dam and dam of sire on a similar basis.
3 In the case of cows with two or more lactations the record lodged may be that for any year the exhibitor may select.

PRESIDENT'S CHAMPION MEDAL for best Ayrshire.

No. 280 M'Allister, Mrs. Mary, Meikle Kilmory, Rothesay, "Meikle Kilmory Snow Queen 2nd" (84,771).

Reserve.—No. 323 Howie, James, Hillhouse, Kilmarnock, "Hobsland Duplicate" (22,581).

Fife and Kinross Perpetual Gold Challenge Cup, value £200, *for best Ayrshire animal, "Extra Stock" being eligible to compete.* This Cup, along with an endowment of £400, was subscribed for by the Counties of Fife and Kinross in commemoration of the Society's first Show at Cupar-Fife in 1912.

No. 280 M'Allister, Mrs. Mary, Meikle Kilmory, Rothesay, "Meikle Kilmory Snow Queen 2nd" (84,771).

Reserve.—No. 323 Howie, James, Hillhouse, Kilmarnock, "Hobsland Duplicate" (22,581).

Cowhill Champion Cup, approximate value £30, *for best animal of the Ayrshire breed, entered with a number in the Herd-Book.* Presented by Major Henry Keswick, Cowhill Tower, Dumfries, to Ayrshire Cattle Herd-Book Society, to be competed for annually at the Shows of the Highland and Agricultural Society of Scotland.

No. 280 M'Allister, Mrs. Mary, Meikle Kilmory, Rothesay, "Meikle Kilmory Snow Queen 2nd" (84,771).

Special Prize of £10 *for the best Female Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st June,* 1925—given by the Ayrshire Cattle Herd-Book Society.

No. 280 M'Alister, Mrs. Mary, Meikle Kilmory, Rothesay, "Meikle Kilmory Snow Queen 2nd" (84,771).

CLASS 38. Cow, in Milk, born before 1922.—Premiums, £12, £8, and £4.

(Not Forward.)

CLASS 39. COW, in Milk, born on or after 1st January, 1922.—Premiums, £10, £7, and £3.

1st	No. 280	M'Alister, Mrs Mary, Meikle Kilmory, Rothesay, "Meikle Kilmory Snow Queen 2nd" (84,771).
2nd	No. 281	M'Alister, Mrs Mary, Meikle Kilmory, Rothesay, "Meikle Kilmory Rose of Bute 7th" (91,253).
3rd	No. 278	Dunlop, Quintin, Greenan, Ayr, "Bruchag Buttercup 3rd" (84,724).
V	No. 279	Gilmour, Hugh, Windhill, Eaglesham, "Windhill Cherry Blossom" (95,356).
H	N. 277	Corbett, Hon. G., Rowallan, Kilmarnock, "Rowallan Lottie" (85,287).
C	No. 276	Clark, John, Dunrod Farm, Inverkip, "Dunrod Daisy White 2nd" (86,412).

CLASS 40. COW, of any age, in Calf, and due to calve before 1st December of the year of the Show.—Premiums, £10, £7, and £3.

1st	No. 290	Hodge, William, Slodahill, Lockerbie, "Slodahill Jemima" (75,675).
2nd	No. 285	Allan, A. Y., Aitkenbar, Dumbarton, "Aitkenbar Rhona" (88,633).
3rd	No. 291	Stewart, Sir Hugh Shaw, Bart., C.B., of Ardgowan. Inverkip, "Ardgowan Noble Lady" (84,231).
V	No. 292	Woodburn, Andrew, Holehouse, Galston, "Holehouse Nan 4th" (78,546).

CLASS 41. HEIFER, born in or after 1922, in Calf, and due to calve before 1st December of the year of the Show.—Premiums, £10, £7, and £3.

1st	No. 293	Barr, Thomas, Hobsland, Monkton, "Hobsland Violet 4th" (88,594).
2nd	No. 301	Stewart, Sir Hugh Shaw, Bart., C.B., Ardgowan, Inverkip, "Ardgowan Nona" (93,781).
3rd	No. 294	Corbett, Hon. G., Rowallan, Kilmarnock, "Rowallan Zweena 4th" (89,841).
V	No. 297	Keswick, Major Henry, Cowhill Tower, Dumfries, "Cowhill Lady Marion" (91,934).
H	No. 298	Logan, John, Bargenoch, Drongan, "Bargenoch Lady Hope" (92,456).
C	No. 299	M'Alister, Mrs. Mary, Meikle Kilmory, Rothesay, "Meikle Kilmory Lady Augusta 2nd" (84,767).

CLASS 42. HEIFER, born in 1923.—Premiums, £10, £5, and £3.

1st	No. 306	Corbett, Hon G., Rowallan, Kilmarnock, "Rowallan Soncie 2nd" (89,840).
2nd	No. 308	Houison-Craufurd, Mrs., Dunlop Place, Dunlop, "Dunlop Baggage" (91,485).
3rd	No. 312	Woodburn, Andrew, Holehouse, Galston, "Holehouse Whitie 8th" (93,261).
V	No. 307	Dalziel, Robert, Rue, Holywood, Auldgirth, "Redhills Pattern Plate" (93,291).
H	No. 305	Buchanan, Andrew, Mid Grange, Dunlop, "Hobsland Bet 18th" (88,566).
C	No. 304	Barr, Thomas, Hobsland, Monkton, "Hobsland Molly 3rd" (88,575).

CLASS 43. HEIFER, born in 1924.—Premiums, £8, £5, and £3.

1st No. 317 Dunlop, Quintin, Greenan, Ayr, "Greenan Miss Bone" (95,122).
2nd No. 315 Corbett, Hon. G., Rowallan, Kilmarnock, "Rowallan Stately Maid" (95,087).
3rd No. 319 Howie, James, Hillhouse, Kilmarnock, "Howie's Sophia" (95.083).
V No. 313 Barr, Thomas, Hobsland, Monkton, "Hobsland Violet 5th" (95,083).
H No. 316 Dunlop, Quintin, Greenan, Ayr, "Greenan Eva 6th" (95,113).
C No. 314 Barr, Thomas, Hobsland, Monkton, "Hobsland Lucy 3rd" (95,039).

Special Prize of £10 *for the best Male animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st June*, 1925—given by the Ayrshire Cattle Herd-Book Society.

No. 323 Howie, James, Hillhouse, Kilmarnock, "Hobsland Duplicate" (22,581).

Breeder of best Bull of any age in Classes 44, 45, *and* 46—The Silver Medal.

No. 323 Barr, Thomas, Hobsland, Monkton.

CLASS 44. BULL, born before 1923.—Premiums, £12, £8, and £4.

1st No. 323 Howie, James, Hillhouse, Kilmarnock, "Hobsland Duplicate" (22,581).
2nd No. 322 Barr, Thomas, Hobsland, Monkton, "Caigton Here's Luck" (22,378).
3rd No. 324 Keswick, Major Henry, Cowhill Tower, Dumfries, "Dunlop Republican" (23,509).

CLASS 45. BULL, born in 1923.—Premiums, £10, £7, and £3.

1st No. 326 Howie, James, Hillhouse, Kilmarnock, "Howie's Topgallant" (23,746).
2nd No. 327 M'Kinlay, Robert, Hillhouse, Sandilands, Lanark, "Hobsland Honour Due" (23,379).
3rd No. 325 Gilmour, Hugh, Windhill, Eaglesham, "Hobsland Royal Design" (23,387).

CLASS 46. BULL, born in 1924.—Premiums, £8, £5, and £3.

1st No. 335 Wilson, Sir David, Bart., Carbeth Home Farm, Balfron Station, Stirlingshire, "Howie's De Luxe" (24,714).
2nd No. 329 Buchanan, Andrew, Mid Grange, Dunlop, "Hobsland Herd Boy" (24,332).
3rd No. 336 Wilson, James, Meadowbank, Mauchline, "Bargenoch Guinea Stamp" (24,569).
V No. 333 Osborne, R. & M. M., Morton Mains, Thornhill, Dumfriesshire, "Morton Mains Delineator."
H No. 331 Hastings, Hugh, Powillimount, Kirkbean, Dumfries, "Powillimount Reformer" (24,901).
C No. 337 Woodburn, Robert, Whitehill, Hurlford, "Hobsland Double Cross" (24,328).

BRITISH FRIESIAN.

PRESIDENT'S CHAMPION MEDAL for best British Friesian Animal.

No. 343 Sinclair, William, Loirston, Aberdeen, "Kirkhill Nellie 7th" (34,296).

Reserve—No. 400 Eaton, George T., Thurston Hall, Framfield, Sussex, "Thurston Karel President" (21,581).

The MacRobert Champion Silver Bell, value 50 Guineas, *for the best animal in the British Friesian Classes, registered in or eligible for entry in the British Friesian Cattle Herd-Book, "Extra Stock" being eligible to compete.* Presented by Lady Rachel Workman MacRobert, Douneside, Tarland.

No. 343 Sinclair, William, Loirston, Aberdeen, "Kirkhill Nellie 7th" (34,296).

Champion Prize of £5 given by the British Friesian Cattle Society *for the best Female exhibited.*

No. 343 Sinclair, William, Loirston, Aberdeen, "Kirkhill Nellie 7th" (34,296).

CLASS 47. COW, in Milk, born in or before 1921.—Premiums, £10, £5, and £3.

1st No. 343 Sinclair, William, Loirston, Aberdeen, "Kirkhill Nellie 7th" (34,296).
2nd No. 352 Taylor, Alexander, Woodhead, West Kilbride, "Dunninald Lucetta" (52,296).
3rd No. 344 Sinclair, William, Loirston, Aberdeen, "Kirkhill Lucy 4th" (39,968).
V No. 341 Moseley, Trustees of the late D., Smithy Farm, Buglawton, Congleton, Cheshire, "Thurston Ellen" (49,368).

CLASS 48. COW, in Calf and not in Milk, born in or before 1921.—Premiums, £10, £5, and £3.

1st No. 346 Bute, The Marquis of, K.T., Mount Stuart, Rothesay, "Haydon Farewell of Holland (P.I.)" (33,864).
2nd No. 353 Wylie, J. A., Barnbeth, Bridge-of-Weir, "Barnbeth (Imported) Sisarika" (58,832).
3rd No. 349 Craig, John, Mill o' Cart Farm, Linwood, Paisley, "Cart Ada" (51,334).
V No. 350 MacLennan, Duncan Alexander, Balmachree, Inverness, "Balmachree Amelia" (50,400).
H No. 351 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Seaton Forget-me-not" (48,764).
C No. 347 Bute, The Marquis of, K.T., Mount Stuart, Rothesay, "Brookland Ymkje (P.I.)" (51,080).
C No. 348 Bute, The Marquis of, K.T., Mount Stuart, Rothesay, "Bute Caprice (P.I.)" (51,190).

CLASS 49. COW, in Milk, born in 1922 or 1923.—Premiums, £10, £5, and £3.

1st No. 356 Eaton, George T., Thurston Hall, Framfield, Sussex, "Thurston Mayflower 2nd" (66,892).
2nd No. 355 Craig, John, Mill o' Cart Farm, Linwood, Paisley, "Hallside Blossom" (62,100).
3rd No. 357 Spence, Andrew, Commieston, Montrose, "Commieston Affannie" (60,166).
V No. 354 Bute, The Marquis of, K.T., Mount Stuart, Rothesay, "Bute Vanessa" (59,668).
H No. 358 Spence, Andrew, Commieston, Montrose, "Commieston Awrest" (60,176).

CLASS 50. HEIFER, born in 1923.—Premiums, £10, £5 and £3.

1st No. 375 Sinclair, William, Loirston, Aberdeen, "Kirkhill Jeltje 4th" (73,016).
2nd No. 363 Eaton, George T., Thurston Hall, Framfield, Sussex, "Thurston Karel Verbena 2nd" (77,008).
3rd No. 368 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Dounside Ischia" (70,596).

V	No. 374	Sinclair, David, Loirston, Aberdeen, "Loirston Lady Nellie" (73,660).
H	No. 365	Eaton, George T., Thurston Hall, Framfield, Sussex, "Thurston Karel Marguerite 2nd" (76,986).
C	No. 364	Eaton, George T., Thurston Hall, Framfield, Sussex, "Thurston Karel Daisy 2nd" (76,964).
C	No. 369	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Benbecula 3rd" (70,588).
C	No. 370	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Minna" (70,602).
C	No. 372	Moseley, Trustees of the late D., Smithy Farm, Buglawton, Congleton, Cheshire, "Buglawton Beatrice" (69,056).

CLASS 51. HEIFER, born in 1924, before 1st July.—Premiums, £10, £5, and £3.

1st	No. 383	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Ischia 2nd."
2nd	No. 379	Eaton, George T., Thurston Hall, Framfield Sussex, "Thurston Ynte Ellen."
3rd	No. 386	Sinclair, David, Loirston, Aberdeen, "Loirston Pansy 3rd."
V	No. 380	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Hatsumer 2nd (P.I.)."
H	No 381	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Glossy 3rd."
C	No. 378	Bute, The Marquis of, K.T., Mount Stuart, Rothesay, "Bute Vogue."
C	No 382	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Nicol 2nd."
C	No. 384	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Noreen 2nd."
C	No. 385	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Mollymine 2nd."

CLASS 52. HEIFER, born in 1924, on or after 1st July.—Premiums, £10, £5, and £3.

1st	No. 388	Eaton, George T., Thurston Hall, Framfield, Sussex, "Thurston Karel Jeltje (P.I.)."
2nd	No. 397	Stewart, Helen T., Craigielea, Milngavie, "Cloberfield Joan."
3rd	No. 389	Eaton, George T., Thurston Hall, Framfield, Sussex, "Thurston Karel Anemone 2nd."
V	No. 393	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Melissy."
H	No. 394	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Douneside Marvel 2nd."
C	No. 387	Bute, The Marquis of, K.T., Mount Stuart, Rothesay, "Bute Kathleen."
C	No. 391	Macaulay, Andrew, Lathalmond Farm, Dunfermline, "Lathalmond Mayflowermijn."
C	No. 395	Spence, Andrew Commieston, Montrose, "Commieston Cannie."

Champion Prize of £5, given by the British Friesian Cattle Society *for the best Male exhibited.*

No. 400 Eaton, George T., Thurston Hall, Framfield, Sussex, "Thurston Karel President" (21,581).

Breeder of best Bull of any age in Classes 53, 54, *and* 55—The Silver Medal.

No. 400 Eaton, George T., Thurston Hall, Framfield, Sussex.

CLASS 53. BULL, born in or before 1922.— Premiums, £10, £5, and £3.

1st No. 400 Eaton, George T., Thurston Hall, Framfield, Sussex, "Thurston Karel President" (21,581).
2nd No. 399 Christison, John, Crossveggate, Milngavie, "Crossveggate Peer" (16,557).
3rd No. 402 M'Pherson, J. & J., Shillingworth, Bridge-of-Weir, "Dunninald Lizard" (16,747).
V No. 403 Mitchell, James, Wamphray, North Berwick, "Loirston Bravo" (20,777).
H No. 404 Moseley, Trustees of the late D., Smithy Farm, Buglawton, Congleton, Cheshire, "Clockhouse King Akrin (P.I.)" (11,321).

CLASS 54. BULL, born in 1923.—Premiums, £10, £5, and £3.

1st No. 407 Pathhead & Sinclairtown Reform Co-operative Society, Limited, 102 Commercial Street, Kirkcaldy, "Douneside St Simon" (22,621).
2nd No. 406 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farms, Tarland, Aberdeenshire, "Hache Apollo (P.I.)" (22,925).

CLASS 55. BULL, born in 1924.—Premiums, £10, £5, and £3.

1st No. 408 Adam, James, Park, Nairn, "Douneside Ideal."
2nd No. 413 Macaulay, Andrew, Lathalmond Farm, Dunfermline, "Lathalmond Akkelad."
3rd No. 417 Wylie, J. A., Barnbeth, Bridge-of-Weir, "Barnbeth Sir Rikadema (P.I.)."
V No. 409 Bute, The Marquis of, K.T., Mount Stuart, Rothesay, "Bute Talisman (P.I.)."
H No. 411 Eaton, George T., Thurston Hall, Framfield, Sussex, "Thurston Karel Khedive 2nd."
C No. 410 Bute, The Marquis of, K.T., Mount Stuart, Rothesay, "Bute Emperor (P.I.)."

RED POLL.

PRESIDENT'S CHAMPION MEDAL for best Red Poll Animal.

No. 446 Smith, A. Carlyle, Sutton Hall, Woodbridge, Suffolk, "Ashmoor Alert."

Reserve—No. 431 Smith, A. Carlyle, Sutton Hall, Woodbridge, Suffolk, "Ashmoor Berry" (31,996).

Kinmount Challenge Cup, value about £50, *for the best Female Animal in the Red Poll Classes registered in the Red Poll Cattle Society's Herd-Book, "Extra Stock" being eligible to compete.* This Cup was presented to the Society by Lieut.-Colonel Charles Brook of Kinmount, Annan.

No. 431 Smith, A. Carlyle, Sutton Hall, Woodbridge, Suffolk, "Ashmoor Berry" (31,996).

CLASS 56. COW, in Milk, born before 1923.—Premiums, £10, £5, and £3.

1st	No. 419	Folkestone, Viscount, Longford Castle, Salisbury "Longford Ruby" (25,233).
2nd	No. 421	Leggat, Hugh, Arthurlie Park, Barrhead, "Honest Winifred" (27,855).
3rd	No. 420	Graham, The Marchioness of, Brodick Castle, Brodick, Arran, "Easton Adela" (29,816).

CLASS 57. HEIFER, born in 1923.—Premiums, £10, £5, and £3.

1st	No. 431	Smith, A. Carlyle, Sutton Hall, Woodbridge, Suffolk, "Ashmoor Berry" (31,996).
2nd	No. 423	His Majesty The King, Sandringham, King's Lynn, "Royal Ruth 2nd" (33,093).
3rd	No. 428	Graham, The Marchioness of, Brodick Castle, Brodick, Arran, "Isle of Arran Carmine" (32,686).
V	No. 430	Leggat, Hugh, Arthurlie Park, Barrhead, "Arthurlie Queen" (31,972).
H	No. 426	Collins, Charles M., Barochan, Houston, Renfrewshire, "Kelvindale Heartease" (32,693).

CLASS 58. HEIFER, born in 1924.—Premiums, £10, £5, and £3.

1st	No. 433	His Majesty The King, Sandringham, King's Lynn, "Royal Primrose" (34,679).
2nd	No. 435	Brook, Lieut.-Colonel Charles, of Kinmount, Annan "Kinmount Euphemia 1st" (24,233).
3rd	No. 434	Brook, Lieut.-Colonel Charles, of Kinmount, Annan, "Kinmount Poppy 3rd" (34,240).
V	No. 436	Collins, Charles M., Barochan, Houston, Renfrewshire, "Kelvindale Parsley" (34,197).

CLASS 59. BULL, born in or before 1923.—Premiums, £10, £5, and £3.

1st	No. 446	Smith, A. Carlyle, Sutton Hall, Woodbridge, Suffolk, "Ashmoor Alert."
2nd	No. 445	Leggat, Hugh, Arthurlie Park, Barrhead, "Holmwood Duke" (12,333).
3rd	No. 441	Folkestone, Viscount, Longford Castle, Salisbury, "Longford Wistful" (13,113).
V	No. 438	Brook, Lieut.-Colonel Charles, of Kinmount, Annan, "Kinmount Clinker."
H	No. 437	Alexander, William, Banknock House, Banknock, Stirlingshire, "Sudbourne Cri-Mo" (12,170).

CLASS 60. BULL, born in 1924.—Premiums, £10, £5, and £3.

1st	No. 452	Tinker, Charley, of Kilmartin, Inverness, "Kilmartin Red Coat" (13,448).
2nd	No. 451	Collins, Charles M., Barochan, Houston, Renfrewshire, "Kelvindale Red Lad" (13,435).
3rd	No. 450	Brook, Lieut.-Colonel Charles, of Kinmount, Annan, "Kinmount John" (13,456).

EXTRA STOCK.

The following was awarded the Silver Medal—

No. 453	Crichton Royal Institution, Crichton Royal Farm, Dumfries, Heifer, "Marham Platinum" (31,443).

FAT CATTLE.

PRESIDENT'S CHAMPION MEDAL for best Fat Animal.

No. 455 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline (Aberdeen-Angus Bull—Cross Cow).

Reserve—No. 458 Donaldson, William Betts, Auchineden, Blanefield, Stirlingshire (Galloway).

CLASS 61. OX, any pure Breed or Cross, born after 1st December, 1922.—Premiums, £7 and £3.

1st No. 455 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline (Aberdeen-Angus Bull—Cross Cow).

2nd No. 454 Bute, The Marquis of, K.T., Dumfries House Home Farm, Old Cumnock, Ayrshire, "Negro" (Galloway).

CLASS 62. OX, any pure Breed or Cross, born after 1st December, 1923.—Premiums, £7 and £3.

1st No. 458 Donaldson, William Betts, Auchineden, Blanefield, Stirlingshire (Galloway).

2nd No. 457 Brodie, Mrs M. L., Lethen, Nairn, "Junto 2nd of Lethen" (57,362) (Aberdeen Angus).

CLASS 63. HEIFER, any pure Breed or Cross, born after 1st December, 1922.—Premiums, £7 and £3.

(No entry.)

CLASS 64. HEIFER, any pure Breed or Cross, born after 1st December, 1923.—Premiums, £7 and £3.

1st No. 459 Brodie, Mrs. M. L., Lethen, Nairn "Edella" (75,913) (Aberdeen Angus).

2nd No. 460 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline (Cross-Bred).

HORSES

FOR AGRICULTURAL PURPOSES.

DRAUGHT STALLIONS.

PRESIDENT'S CHAMPION MEDAL for best Clydesdale Stallion or Colt.

No. 490 Templeton, T. & M., Sandyknowe, Kelso, "Benefactor" (20,867).
Reserve—No. 517 Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie Ambition."

Breeder of best Male Animal of any age in Classes 65, 66, 67, and 68—The Silver Medal.

No. 490 William Meiklem, Bennochy Park, Kirkcaldy.

CLASS 65. STALLION, born before 1922.— Premiums, £20, £15, £10, and £4.

1st	No. 473	Pollock, John, Byres Farm, Pollokshaws, "Flower of the Day" (20,914).
2nd	No. 470	Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie M'Quaid" (20,724).
3rd	No. 471	Lumsden, Robert, Kippit Farm, Dolphinton, "Hilton Autocrat" (19,751).
4th	No. 462	Adams, David, Auchencraig, Dumbarton, "The Dunlop" (20,831).
V	No. 463	Alston, George, Loudoun Hill, Darvel, "The Ally" (19,291).
H	No. 469	Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie Gayman" (20,531).
C	No. 468	Johnston, John, & Son, Dunmore Home Farm, Larbert, "Nyasa Footprint" (20,796).
C	No. 474	Reid, Trustees of the late Alexander, Old Bishopton, Bishopton, "The Bishop of Old Bishopton" (20,993).

CLASS 66. ENTIRE COLT, born in 1922.— Premiums, £20, £15, £10, and £4.

1st	No. 490	Templeton, T. & M., Sandyknowe, Kelso, "Benefactor" (20,867).
2nd	No. 487	Marshall, Albert James, Bridgebank, Stranraer, "Bridgebank Footman" (20,877).
3rd	No. 484	Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie Platinum" (21,055).
4th	No. 481	Clark, Alexander, Strathore House, Thornton, Fife, "Pride of Strathore" (20,963).
V	No. 482	Clark, Allan, Woodbank, Windygates, Fife, "Woodbank Welcome" (21,007).
H	No. 479	Argo, George, Petty, Fyvie, "Petty Royal" (20,998).
C	No. 489	Reid, Trustees of the late Alexander, Old Bishopton, Bishopton, "Luxor of Old Bishopton" (21,102).

William Taylor Memorial Prize of £10 and Certificate *to the Breeder of the best Clydesdale Colt entered in Classes* 67 *and* 68—given by William Taylor Memorial Committee.

No. 517 James Beaton, Mains of Glack, Pitcaple.

CLASS 67. ENTIRE COLT, born in 1923.—
Premiums, £20, £15, £10, and £4.

1st	No. 495	Chapman, R. & J., Johnston, Gartcosh, " Barons Eclipse."
2nd	No. 499	Kilpatrick, James, Craigie Mains, Kilmarnock, " Craigie Exquisite " (21,053).
3rd	No. 496	Clark, James, Netherlea, Cathcart, " Royal Enterprise."
4th	No. 494	Caldwell, Alexander, Dunure Mains, Dunure, Ayr, " Isolation " (21,092).
V	No. 506	Wyllie, Scott, Milton of Luncarty, Perth, " Milton Excell."
H	No. 498	Kilpatrick, James, Craigie Mains, Kilmarnock, " Craigie Endeavour."
C	No. 492	Alston, George, Loudoun Hill, Darvel, " Glencraig."
C	No. 493	Brown, Samuel, Culraven, Kirkcudbright, " Culraven Conqueror."

CLASS 68. ENTIRE COLT, born in 1924.—
Premiums, £15, £10, £6, and £4.

1st	No. 517	Kilpatrick, James, Craigie Mains, Kilmarnock, " Craigie Ambition."
2nd	No. 514	Gray, James, Crawfordston, Kippen, " Convince."
3rd	No. 512	Clark, Thomas, Pitlandie, Stanley, Perth.
4th	No. 515	Johnston, John, & Son, Dunmore Home Farm, Larbert.
V	No. 507	Adams, David, Auchencraig, Dumbarton, " Dumfries."
H	No. 522	Montgomery, A., & Company, Jordieland, Kirkcudbright.
C	No. 521	Marshall, Albert James, Bridgebank, Stranraer.
C	No. 526	Stirling, Hugh B., Darlingfield, Gordon, " Freighter."
C	No. 520	M'Connel, James, Boreland, Whauphill, " Bright Record."

DRAUGHT GELDINGS.

PRESIDENT'S CHAMPION MEDAL for best Draught Gelding.

No. 531 Fleming, James, Barns of Claverhouse, Dundee, " Blythe."
Reserve—No. 533 Kerr, William, Bell Mount, Penrith, " Jeff."

CLASS 69. DRAUGHT GELDING, born before 1922.—
Premiums, £10, £5, and £3.

1st	No. 531	Fleming, James, Barns of Claverhouse, Dundee, " Blythe."
2nd	No. 533	Kerr, William, Bell Mount, Penrith, " Jeff."
3rd	No. 537	Scottish Co-operative Wholesale Society, Limited, 95 Morrison Street, Glasgow, " Bob."
V	No. 528	Baird, Brig.-General E. W. D., Reedyloch, Edrom, Berwickshire, " The General."
H	No. 530	Clark, James, Netherlea, Cathcart, " Sandy."
C	No. 536	Scottish Co-operative Wholesale Society, Limited, 95 Morrison Street, Glasgow, " Adam."
C	No. 535	Kyle, John W., Barskiven, Paisley, " Glen."
C	No. 538	Scottish Co-operative Wholesale Society, Limited, 95 Morrison Street, Glasgow, " Withheld."

CLASS 70. DRAUGHT GELDING, born in 1922.—
Premiums, £8, £5, and £3.

1st	No. 541	Kerr, William, Bell Mount, Penrith, " Mutt."
2nd	No. 544	Sleigh, Alexander, Mains of Tolquhon, Tarves, " Jakie."
3rd	No. 542	Scottish Co-operative Wholesale Society, Limited, 95 Morrison Street, Glasgow, " Norman."
V	No. 539	Dalziel, Robert, Rue, Holywood, Auldgirth, " Ned."
H	No. 540	Elliot, Charles S., Nisbet Hill, Duns, " Geordie."

CLASS 71. DRAUGHT GELDING, born in 1923.— Premiums, £8, £5, and £3.

1st	No. 548	Dalziel, Robert, Rue, Holywood, Auldgirth, "Prince."
2nd	No. 551	Miller, William S., Balmanno Castle, Bridge-of-Earn.
3rd	No. 549	Gray, James, Crawfordston, Kippen, "Jim."
V	No. 546	Campbell, George, Gartness, Drymen, "Warrior."
H	No. 554	Sleigh, John P., of St John's Wells, Fyvie, "Jim."
C	No. 550	Keswick, Major Henry, Cowhill Tower, Dumfries, "Prince."
C	No. 555	Sleigh, John P., of St John's Wells, Fyvie, "Harry."

DRAUGHT MARES AND FILLIES.

PRESIDENT'S CHAMPION MEDAL for best Clydesdale Mare or Filly.

No. 571 Kilpatrick, James, Craigie Mains, Kilmarnock, Filly, "Craigie Ella."

Reserve—No. 561 Templeton, T. & M., Sandyknowe, Kelso, "Gladys."

Paisley Perpetual Gold Challenge Cup, value £300, *for best Clydesdale Mare or Filly, "Extra Stock" being eligible to compete.* This Cup, along with an endowment of £600, was provided from money collected in Paisley by the late Provost Muir MacKean, and is in commemoration of the Society's first Show at Paisley in 1913.

No. 571 Kilpatrick, James, Craigie Mains, Kilmarnock, Filly, "Craigie Ella."

Reserve—No. 561 Templeton, T. & M., Sandyknowe, Kelso, "Gladys."

Cawdor Challenge Cup, value 50 Guineas, *for best Clydesdale Mare or Filly registered in the Clydesdale Stud-Book*—given by the Clydesdale Horse Society.

No. 561 Templeton, T. & M., Sandyknowe, Kelso, "Gladys."

CLASS 72.—MARE of any age, with foal at foot.— Premiums, £20, £12, £7, and £4.

1st	No. 561	Templeton, T. & M., Sandyknowe, Kelso, "Gladys."
2nd	No. 560	Mackay, Robert, Ballochmartin, Millport, "Cherry Blossom" (52,607).
3rd	No. 558	Gray, James, Birkenwood, Kippen Station, "Rue Mayflower."
4th	No. 557	Elliot, Charles S., Nisbet Hill, Duns, "Nisbet Harmony" (53,539).

CLASS 73. YELD MARE, born before 1922.— Premiums, £12, £9, £6, and £4.

1st	No. 564	Gray, James, Birkenwood, Kippen Station, "Faith."
2nd	No. 563	Clark, Thomas, Pitlandie, Stanley, Perth, "Margaret."
3rd	No. 566	Murdoch, Alexander, East Hallside, Hallside, Glasgow, "Ophelia" (55,513).
4th	No. 568	Russell, Andrew, Summerston, Maryhill, "Jessie's Dream."
V	No. 565	M'Call Brothers, Burnhead, Kilsyth, "Burnhead Mattie" (55,400).

CLASS 74. YELD MARE or FILLY, born in 1922.— Premiums, £12, £9, £6, and £4.

1st	No. 571	Kilpatrick, James, Craigie Mains, Kilmarnock, Filly, "Craigie Ella."
2nd	No. 575	Walker, Robert, Langland, Kilmaurs, Filly, "Langland Blossom."
3rd	No. 573	Reith, W. & J., Kennerty Farm, Peterculter, Aberdeenshire, Filly, "Dunure Real."
4th	No. 572	Reid, Trustees of the late Alexander, Old Bishopton, Bishopton, Mare, "Lady Betty of Old Bishopton."

CLASS 75. FILLY, born in 1923.—Premiums, £12, £9, £6, and £4.

1st	No. 591	Sleigh, John P., of St John's Wells, Fyvie, "Wells Lorna."
2nd	No. 577	Armstrong, J. A., The Beeches, Tarraly, Carlisle, "Virol."
3rd	No. 585	M'Nee, John, Afton House, Crieff, "Beauty of Dundurn."
4th	No. 584	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Prudence."
V	No. 594	Templeton, T. & M., Sandyknowe, Kelso.
H	No. 581	Gray, James, Birkenwood, Kippen Station, "Ginger Snap."
C	No. 588	Paterson, Robert, Stamperland, Cathcart, "Queenie of Stamperland."
C	No. 587	Parker, John & Hugh, Auchenhay, Twynholm.
C	No. 578	Elliot, Charles S., Nisbet Hill, Duns, "Nisbet Maybelle."
C	No. 593	Taylor, Alexander, Inveravon, Polmont, "Norma"

CLASS 76. FILLY, born in 1924.—Premiums, £12, £9, £6, and £4.

1st	No. 600	Murdoch, Alexander, East Hallside, Hallside, Glasgow, "Orange Blossom."
2nd	No. 595	Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Bantaskin Rose."
3rd	No. 604	Sleigh, Alexander, Mains of Tolquhon, Tarves, "Lady Arden."
4th	No. 603	Russell, Andrew, Summerston, Maryhill, "Beauty's Blossom."
V	No. 598	Gray, James, Crawfordston, Kippen, "Margaret."
H	No. 601	Paterson, Robert, Stamperland, Cathcart.

HUNTERS.

PRESIDENT'S CHAMPION MEDAL for best Hunter in Classes 77 to 83 (inclusive).

No. 641 Thomson, Major A. D., Nenthorn, Kelso, Gelding, "Indicator."
Reserve—No. 617 Thomson, Major A. D., Nenthorn, Kelso, Gelding, "Kerrysdale."

CLASS 77. HUNTER BROOD MARE, with Foal at foot.—Premiums, £15, £7, and £3.

1st	No. 605	Cheape, Brig.-General R., C.M.G., D.S.O., M.C., Wellfield, Gateside, Fife, "Lady Grace."

Best Hunter Filly, not exceeding three years old, registered with a number in the Hunter Stud-Book, or the entry tendered within a month of the award—Champion Gold Medal, given by the Hunters' Improvement and National Light Horse Breeding Society.

No. 607 Cheape, Brig.-General R., C.M.G., D.S.O., M.C., Wellfield, Gateside, Fife, Filly, "Sunflower."

CLASS 78. YELD MARE, FILLY, or GELDING, born in 1922—*in hand*.—Premiums, £10, £5, and £3.

1st	No. 609	Dove, G. H. J., Mellerstain, Gordon, Gelding, "St Anthony."
2nd	No. 606	Brook, Lieut.-Colonel Charles, of Kinmount, Annan, Gelding, "Warrior."
3rd	No. 607	Cheape, Brig.-General R., C.M.G., D.S.O., M.C., Wellfield, Gateside, Fife, Filly, "Sunflower."
V	No. 612	Thomson, Moffat S., of Lambden, Greenlaw, Berwickshire, Filly.

CLASS 79. YELD MARE, FILLY, or GELDING, born in 1923—*in hand*—Premiums, £10, £5, and £3.

1st No. 617 Thomson, Major A. D., Nenthorn, Kelso, Gelding, "Kerrysdale."
2nd No. 613 Davidson, Gilbert, Burnfoot, Hawick, Gelding.
3rd No. 614 Hignett, Fawcett, Bankfield House, West Derby, Liverpool, Filly, "Flying Hornet" (6449).

CLASS 80. COLT, GELDING, or FILLY, born in 1924, the produce of Thoroughbred Stallion or registered Hunter sire, out of Mare of any breed.—Premiums, £10, £5, and £3.

1st No. 623 Thomson, Moffat S., of Lambden, Greenlaw, Berwickshire, Gelding.
2nd No. 620 Davidson, Gilbert, Burnfoot, Hawick, Gelding.
3rd No. 622 Nairn, Major R. Spencer, Leslie House, Leslie, Fife, Colt, "The Friar."

CLASS 81. MARE or GELDING, born in or before 1921, to carry 14 st. 7 lb. and upwards—*in saddle.*—Premiums, £15, £10, and £5.

1st No. 627 Young, James L., 4 Gordon Street, Paisley, Gelding, "Bo'sun."
2nd No. 624 Campbell, Miss Lucy K. G., Garscube, Glasgow, Gelding, "Aquila."
3rd No. 626 Ross, David, 60 Wellington Street, Glasgow, Gelding, "Badger."

CLASS 82. MARE or GELDING, born in or before 1921, to carry 12 st. 7 lb. and under 14 st. 7 lb.—*in saddle.*—Premiums, £15, £10, and £5.

1st No. 641 Thomson, Major A. D., Nenthorn, Kelso, Gelding, "Indicator."
2nd No. 629 Black, A. A. Stuart, Croy, Shandon, Dumbartonshire, Gelding, "Johnnie Morgan."
3rd No. 631 Campbell, Miss Lucy K. G., Garscube, Glasgow, Mare, "Clipston Ladybird" (6087).
V No. 634 Collins, Charles M., Barochan, Houston, Mare, "Sea Queen."

CLASS 83. MARE or GELDING, born in or before 1921, to carry under 12 st. 7 lb.—*in saddle.*—Premiums, £15, £10, and £5.

1st No. 645 Campbell, Miss Lucy K. G., Garscube, Glasgow, Gelding, "Dermot."
2nd No. 643 Bell, David, Peel Houses, Lockerbie, Gelding, "Letter Box."
3rd No. 647 Glen, Margaret Louise, 107 St Andrew's Drive, Glasgow, Gelding, "Be Prepared."
V No. 646 Collins, Charles M., Barochan, Houston, Gelding, "Standing Stone."

CLASS 84. HACK of HUNTER type, born in or before 1921, 15.2 hands and under—*in saddle.*—Premiums, £8, £5, and £3.

1st No. 652 Davidson, Gilbert, Burnfoot, Hawick, Mare, "Minx's Beauty."
2nd No. 654 Houston, George B., Finlaystone, Langbank, Renfrewshire, Mare, "Dianna."
3rd No. 653 Dunn, Richard, Udston Cottage Farm, Hamilton, Mare, "Rosey Visto."
V No. 657 M'Cubbin, John G., King's Arms Hotel, Maybole, Gelding, "Michael VII."
H No. 659 Young, James L., 4 Gordon Street, Paisley, Gelding, "Red Fox."

HACKNEYS.

(ALL SHOWN IN HAND.)

PRESIDENT'S CHAMPION MEDAL for best Hackney in Classes 85 to 87.

No. 661 Glen, Enoch, Kaim Park, Bathgate, "Terrington Housemaid" (18,664).
Reserve—No. 662 Rogerson, Alexander, Low Mill, Carluke, Filly, "Katinka" (26,425).

CLASS 85. BROOD MARE, over 14 hands, with Foal at foot, or to foal this season to a registered sire. Registered in the Hackney Stud-Book.—Premiums, £10, £6, and £4.

1st No. 661 Glen, Enoch, Kaim Park, Bathgate, "Terrington Housemaid" (18,664).
2nd No. 660 Beattie, James W., 122 Battlefield Road, Langside, Glasgow, "Lady Ossington."

CLASS 86. YELD MARE or FILLY, born in or after 1922. Registered in the Hackney Stud-Book.—Premiums, £8, £5, and £3.

1st No. 662 Rogerson, Alexander, Low Mill, Carluke, Filly, "Katinka" (26,425).

CLASS 87. STALLION, born in or before 1922, over 14 hands. Registered in the Hackney Stud-Book.—Premiums, £10, £6, and £4.

(Not forward.)

PONIES.

PRESIDENT'S CHAMPION MEDAL for best Pony.

No. 666 Glen, Enoch, Kaim Park, Bathgate, "Holland Maniton" (14,014).
Reserve—No. 670 Chassels, James R., 116 Maxwell Drive, Pollokshields, Glasgow, Mare, "Clyde Masque."

CLASS 88. STALLION, Three Years Old and upwards, 14 hands and under—*in hand*.—Premiums, £5, £3, and £2.

1st No. 666 Glen, Enoch, Kaim Park, Bathgate, "Holland Maniton" (14,014).
2nd No. 667 Ritchie, W. L., Bellevue, Busby, Renfrewshire, "Sarmiento (13,480).

CLASS 89.—YELD MARE, FILLY, or GELDING, Three Years Old and upwards, 14 hands and under—*in saddle*.—Premiums, £5, £3, and £2.

1st No. 670 Chassels, James R., 116 Maxwell Drive, Pollokshields, Glasgow, Mare, "Clyde Masque."
2nd No. 669 Chassels, James R., 116 Maxwell Drive, Pollokshields, Glasgow, Mare, "Inveresk Cat"

HIGHLAND PONIES.

PRESIDENT'S CHAMPION MEDAL for best Highland Pony.

No. 674 Cairns, James M., Ardlarach House, Luing, Oban, "Moira" (5090).
Reserve—No. 673 Wooley, Thomas, Commercial Hotel, Bonarbridge, Sutherland, "Tullochgorm."

Special Prize of £10 *for the best Highland Stallion, Mare, Colt, or Filly, entered or accepted for entry in the Highland Section of the National Pony Stud-Book, "Extra Stock" being eligible to compete. Competition strictly confined to animals passed sound and free from hereditary disease*—given by the National Pony Society.

No. 674 Cairns, James M., Ardlarach House, Luing, Oban, "Moira" (5090).

CLASS 90. STALLION, born before 1923, not exceeding 14.2 hands.—Premiums, £8, £4, and £2.

1st No. 673 Wooley, Thomas, Commercial Hotel, Bonarbridge, Sutherland, "Tullochgorm."

CLASS 91. MARE, born before 1923, not exceeding 14.2 hands, Yeld or with Foal at foot.—Premiums, £8, £4, and £2.

1st No. 674 Cairns, James M., Ardlarach House, Luing, Oban, "Moira" (5090).
2nd No. 678 Wright, J. Moncrieff, of Kinmonth, Bridge-of-Earn, "Ribhinn Oig" (4689).
3rd No. 676 Maxwell, Miss Anne Stirling, Pollok House, Pollokshaws, "Corrour Cailleach" (4053).
V No. 677 Sharp, Miss E. C., of Balmuir, Dalnaglar, Glenshee, Perthshire, "Shiela of Dalnaglar" (4745).
C No. 675 Mackelvie, Donald, New Lanark, Lamlash, "Glen Tanna" (4702).

CLASS 92. ENTIRE COLT, born on or after 1st January, 1923.—Premiums, £6, £4,, and £2.

1st No. 679 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, "Beinn Bhuroch."

CLASS 93. FILLY, born on or after 1st January, 1923.—Premiums, £6, £4, and £2.

1st No. 680 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, "Lady Leah."
2nd No. 681 Graham, The Marquis of, C.B., Brodick Castle, Brodick, Arran, "Isle of Arran Frangag" (5025).

WESTERN ISLAND PONIES.

PRESIDENT'S CHAMPION MEDAL for best Western Island Pony.

No. 697 Wright, J. Moncrieff, of Kinmonth, Bridge-of-Earn, "Isle of Arran Bonnie Jean" (4408).
Reserve—No. 687 Mackenzie, W. D., of Farr, House of Farr, Inverness, "Bonnie Charlie of Farr" (1124).

Special Prize of £10 *for the best Western Island Stallion, Mare, Colt, or Filly, entered or accepted for entry in the Highland Section of the National Pony Stud-Book, "Extra Stock" being eligible to compete. Competition strictly confined to animals passed sound and free from hereditary disease*—given by the Highland Pony Society.

No. 697 Wright, J. Moncrieff, of Kinmonth, Bridge-of-Earn, "Isle of Arran Bonnie Jean" (4408).

CLASS 94. STALLION, born before 1923, not exceeding 14 hands.—Premiums, £8, £4, and £2.

1st No. 685 Ross, Charles D. M., Ibert, Crieff, " Beachdair " (1132).
2nd No. 683 Mackenzie, J. H. Munro, of Calgary, Isle of Mull, " Pirate " (1204).
3rd No. 684 Maxwell, Miss Anne Stirling, Pollok House, Pollokshaws, " Corrour Ghuilbinn " (1109).
V No. 682 Girvan, W. M., Glenfalloch, Ardlui, " Donald Falloch " (1332).

EXTRA STOCK.

The following was awarded the Silver Medal—

No. 687 Mackenzie, W. D., of Farr, House of Farr, Inverness, " Bonnie Charlie of Farr " (1124).

The following was awarded the Medium Silver Medal—

No. 686 Bowie, Allan J., Thrushcraig, Paisley, " Lord of the Isles " (999).

CLASS 95. MARE, born before 1923, not exceeding 14 hands, Yeld or with Foal at foot.—Premiums, £8, £4, and £2.

1st No. 690 Mackelvie, Donald, New Lanark, Lamlash, " Glen Rosa " (4275).
2nd No. 695 Maxwell, Miss Anne Stirling, Pollok House, Pollokshaws, " Corrour Spean " (4392).
3rd No. 693 Mackenzie, J. H. Munro, of Calgary, Isle of Mull, " Dunara " (5095).
V No. 692 Mackelvie, Donald, New Lanark, Lamlash, " Glencloy " (4705).

EXTRA STOCK.

The following was awarded the Silver Medal—

No. 697 Wright, J. Moncrieff, of Kinmonth, Bridge-of-Earn, " Isle of Arran Bonnie Jean " (4408).

CLASS 96. ENTIRE COLT, born on or after 1st January, 1923.—Premiums, £6, £4, and £2.

1st No. 698 Hamilton, Mrs Ian, Strathleven, Dumbarton, " Lord of the Glen."

CLASS 97. FILLY, born on or after 1st January, 1923.—Premiums, £6, £4, and £2.

1st No. 701 Mackelvie, Donald, New Lanark, Lamlash, " Patsy."
2nd No. 699 Graham, The Marquis of, C.B., Brodick Castle, Brodick, Arran, " Isle of Arran Milread " (5026).
3rd No. 702 Mackenzie, J. H., Munro, of Calgary, Isle of Mull, " Erisgeir " (5094).

SHETLAND PONIES.

(ALL SHOWN IN HAND.)

PRESIDENT'S CHAMPION MEDAL for best Shetland Pony.

No. 711 Duffus, Mrs Etta, Penniwells, Elstree, Herts., "Dibblitz of Penniwells " (1087).
Reserve—No. 717 Duffus, Mrs. Etta, Penniwells, Elstree, Herts., " Mayfair of Penniwells " (4052).

Silver Cup *for best Shetland Pony of either sex and any age, drawn from ordinary Classes, and shown in saddle*—given by a past President of the Shetland Pony Stud-Book Society.

No. 704 Douglas, Mrs A. I., Auchlochan, Lesmahagow, "Pussyfoot of Auchlochan" (1063).

Best group of Shetland Ponies, consisting of one male and two females, of any age, entered in Classes 98, 99, 100, 101, *and* 102.—Premium, £10—given by "Five Lovers of the Breed," per Mr. W. Mungall of Transy.

Duffus, Mrs Etta, Penniwells, Elstree, Herts. (705, 717, 725).

Silver Medal *for the best Shetland Pony of the sex opposite to that of the winner of the President's Medal, entered or eligible for entry in the Shetland Pony Stud-Book*—given by the Shetland Pony Stud-Book Society.

No. 717 Duffus, Mrs Etta, Penniwells, Elstree, Herts., "Mayfair of Penniwells" (4052).

CLASS 98. STALLION, not exceeding 10½ hands, born before 1922.—Premiums, £8, £5, £3, and £2.

1st No. 705 Duffus, Mrs Etta, Penniwells, Elstree, Herts., "Didyme of Penniwells" (1088).

2nd No. 708 Mungall, William, of Transy, Dunfermline, "Sonyad of Transy."

3rd No. 703 Douglas, Mrs A. I., Auchlochan, Lesmahagow, "Everyman of Auchlochan" (1053).

4th No. 709 Robertson, Mrs G., Sandhills, Monkton, Ayrshire, "Haugh of Urr" (997).

V No. 704 Douglas, Mrs A. I., Auchlochan, Lesmahagow, "Pussyfoot of Auchlochan" (1063).

H No. 706 Houldsworth, Mrs W. T. R., Kirkbride, Maybole, Ayrshire, "Knave of Ross" (868).

C No. 710 Roy, William, St Ives, Crieff, "Sirdar of Raemoir" (1068)

EXTRA STOCK.

The following was awarded the Silver Medal :—

No. 711 Duffus, Mrs Etta, Penniwells, Elstree, Herts, "Dibblitz of Penniwells" (1087).

CLASS 99. ENTIRE COLT, not exceeding 10½ hands, born in 1922 or 1923.—Premiums, £8, £5, £3, and £2

1st No 713 Mackenzie, R. W. R., of Earlshall, Leuchars, Fife, "Emillius of Earlshall."

2nd No. 714 Mungall, William, of Transy, Dunfermline, "Pamelon of Transy."

CLASS 100. MARE not exceeding 10½ hands, with Foal at foot.—Premiums, £8, £5, £3, and £2.

1st No. 717 Duffus, Mrs Etta, Penniwells, Elstree, Herts., "Mayfair of Penniwells" (4052).

2nd No. 722 Mungall, William, of Transy, Dunfermline, "Felecia of Transy" (3945).

3rd No. 720 Mackenzie, R. W. R., of Earlshall, Leuchars, Fife, "Emery of Earlshall" (3927).

4th No. 719 Mackenzie, R. W. R., of Earlshall, Leuchars, Fife, "Ruby of Earlshall" (3733).

V No. 718 Kerr, J. E., of Harviestoun, Dollar, "Tiarella" (3591).

H No. 715 Douglas, Mrs A. I., Auchlochan, Lesmahagow, "Folly of Auchlochan (4046).

C No. 716 Douglas, Mrs A. I., Auchlochan, Lesmahagow, "Prunella of Auchlochan."

CLASS 101. YELD MARE, not exceeding 10½ hands.—Premiums, £8, £5, £3, and £2.

1st No. 725 Duffus, Mrs Etta, Penniwells, Elstree, Herts., "May Eve of Penniwells" (4051).
2nd No. 729 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Stella."
3rd No. 732 Robertson, Mrs G., Sandhills, Monkton, Ayrshire, "Enid of Hythe."
4th No. 728 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Senga."
V No. 731 Mungall, William, of Transy, Dunfermline, "Peerless of Transy."
H No. 726 Findlay, Miss N. H., Barncailzie Hall, Dalbeattie, "Ruth of Rivington."
C No. 727 Houston, Alexander, Marylea, Paisley.

CLASS 102. FILLY, not exceeding 10½ hands, born in 1922 or 1923.—Premiums, £8, £5, £3, and £2.

1st No. 741 Robertson, Mrs G., Sandhills, Monkton, Ayrshire, "Maid of Shinnel."
2nd No. 736 Duffus, Mrs Etta Penniwells, Elstree, Herts., "Heath-Belle of Penniwells."
3rd No. 737 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Sheila."
4th No. 740 Robertson, Mrs G., Sandhills, Monkton, Ayrshire. "Sonia."
V No. 735 Douglas, Mrs A. I., Auchlochan, Lesmahagow, "Fortune of Auchlochan."
H No. 734 Douglas, Mrs. A. I., Auchlochan, Lesmahagow, "Harmony of Auchlochan."
C No. 738 Mackenzie, R. W. R., of Earlshall, Leuchars, Fife, "Ornis of Earlshall."
C No. 739 Mungall, William, of Transy, Dunfermline, "Sunbeam of Transy."

RIDING PONIES.

CLASS 103. MARE or GELDING, any age, over 12 hands and not exceeding 14 hands, in saddle, to be ridden by boy or girl 10 years and under 14 years of age on first day of Show.—Premiums, £5, £3, and £2.

1st No. 746 Chassels, William, Athron Grange, Motherwell, Gelding.
2nd No. 745 Chassels, Mirrlees, Athron Grange, Motherwell, Mare.
3rd No. 750 Rennie, Jack, Glenview, Paisley, Mare, "Mabel."
V No. 743 Brown, John A , Westerton, Killearn, Gelding, "Hugo."
H No. 751 Wilson, Miss Valerie, Wellsbourne, Ayr, Gelding, "Strawberry King."

CLASS 104. MARE or GELDING, any age, not exceeding 12 hands, in saddle, to be ridden by boy or girl under 10 years of age on first day of Show.—Premiums, £5, £3, and £2.

1st No. 756 Parsons. Luke, Fordbank, Milliken Park, Renfrewshire, Gelding, "Squirrel."
2nd No. 759 Robertson, Miss W. A., Stockbridge, Symington, Kilmarnock, Mare, "Whitefoot."
3rd No. 754 Chassels, James R., 116 Maxwell Drive, Pollokshields, Glasgow, Mare.
V No. 755 Houston, Alexander C., Marylea, Paisley, Mare.
H No. 758 Robertson, Miss W. A., Stockbridge, Symington, Kilmarnock, Mare, "Boadicea."
C No. 753 Brisbane, Peter, 1046 Pollokshaws Road, Shawlands, Glasgow, Mare.

HORSES IN HARNESS.

(ALL ANIMALS DRIVEN IN THE RING.)

PRESIDENT'S CHAMPION MEDAL for best animal in the Classes for Horses in Harness.

No. 785 Miller, William S., Balmanno Castle, Bridge-of-Earn, Gelding, "Billet Doux" (G382).
Reserve—No. 780 Thomson, Robert, Cora Linn, Peckham, London, Gelding, "Cockleroi" (G314).

The "Glasgow" Champion Challenge Cup, value £50, *for best Horse in Single Harness, limited to First, Second, and Third Prize Winners in Harness Classes, and animals entered as "Extra Stock." The First Reserve will receive £5, the Second £4, the Third £3, the Fourth £2.*

1st and *Champion*—No. 785 Miller, William S., Balmanno Castle, Bridge-of-Earn, Gelding, "Billet Doux" (G382).
1st *Reserve*—No. 780 Thomson, Robert, Cora Linn, Peckham, London, Gelding, "Cockleroi" (G314).
2nd *Reserve*—No. 770 Scott, Robert, Thornhome, Carluke, Gelding, Born May, 1918.
3rd *Reserve*—No. 784 Highet, John, Curtican, Ayr, Mare, "Queen of Trumps (26,390).
4th *Reserve*—No. 764 Hamilton, Robert, 410 Rutherglen Road, Glasgow, Gelding, "Glenavon Glory" (G223).

OPEN CLASSES.

CLASS 105. YELD MARE, FILLY, or GELDING, any age, in harness, exceeding 15 hands, to be driven in the ring.—Premiums, £15, £10, £6, and £3.

1st No. 768 Miller, William S., Balmanno Castle, Bridge-of-Earn, Gelding, "Grand Fashion" (G325).
2nd No. 770 Scott, Robert, Thornhome, Carluke, Gelding.
3rd No. 764 Hamilton, Robert, 410 Rutherglen Road, Glasgow, Gelding, "Glenavon Glory" (G223).
4th No. 762 Glen, Enoch, Kaim Park, Bathgate, Gelding, "Glenavon Nonpareil" (G344).
V No. 760 Beattie, James W., 122 Battlefield Road, Langside, Glasgow, Gelding, "St Columba" (12,485).
H No. 766 Kinross, William, 13 Clarendon Place, Stirling, Gelding, "Lochardil Orchid" (G249).

CLASS 106. YELD MARE, FILLY, or GELDING, any age, in harness, over 14 hands and not exceeding 15 hands, to be driven in the ring.—Premiums, £15, £10, £6, and £3.

1st No. 780 Thomson, Robert, Cora Linn, Peckham, London, Gelding, "Cockleroi" (G314).
2nd No. 775 Chapman, R. & J., Johnston, Gartcosh, Gelding, "V. C."
3rd No. 773 Beattie, James W., 122 Battlefield Road, Langside, Glasgow, Mare, "Glenavon Purity" (24,906).
4th No. 777 Hamilton, Robert, 410 Rutherglen Road, Glasgow, Mare, "Axholme Marjorie" (24,434).

EXTRA STOCK.

The following was awarded the Silver Medal:—

No. 782 Miller, William S., Balmanno Castle, Bridge-of-Earn, Mare, "Stella Vane" (25,386).

CLASS 107. YELD MARE, FILLY, or GELDING, any age, not exceeding 14 hands, to be driven in the ring.—Premiums, £15, £10, £6, and £3.

1st	No. 785	Miller, William S., Balmanno Castle, Bridge-of-Earn, Gelding, "Billet Doux" (G382).
2nd	No. 784	Highet, John, Curtican, Ayr, Mare, "Queen of Trumps" (26,390).
3rd	No. 742	Beattie, James W., 122 Battlefield Road, Langside, Glasgow, Mare, "Holland Fumara" (25,672).
4th	No. 669	Chassels, James R., 116 Maxwell Drive, Pollokshields, Glasgow, Mare, "Inveresk Cat."
V	No. 670	Chassels, James R., 116 Maxwell Drive, Pollokshields, Glasgow, Mare, "Clyde Masque."

NOVICE CLASSES.

CLASS 108. YELD MARE, FILLY, or GELDING, any age, in harness, exceeding 15 hands, which has never won a First Prize exceeding the value of £10 at any Show prior to 1st January, 1925 (Sales excluded).—Premiums, £12, £8, £6, and £3.

1st	No. 770	Scott, Robert, Thornhome, Carluke, Gelding.
2nd	No. 762	Glen, Enoch, Kaim Park, Bathgate, Gelding, "Glenavon Nonpareil" (G344).
3rd	No. 765	Highet, John, Curtican, Ayr, Mare, "Wardhead Lady Grace" (26,389).
4th	No. 760	Beattie, James W., 122 Battlefield Road, Langside, Glasgow, Gelding, "St Columba" (12,485).
V	No. 761	Chassels, James R., 116 Maxwell Drive, Pollokshields, Glasgow, Gelding, "Clyde Antonius."

CLASS 109. YELD MARE, FILLY, or GELDING, any age, in harness, over 14 hands and not exceeding 15 hands, which has never won a First Prize exceeding the value of £10 at any Show prior to 1st January, 1925 (Sales excluded).—Premiums, £12, £8, £6, and £3.

1st	No. 776	Glen, Enoch, Kaim Park, Bathgate, Mare, "Glenavon Opal" (25,756).
2nd	No. 777	Hamilton, Robert, 410 Rutherglen Road, Glasgow, Mare, "Axholme Marjorie" (24,434).
3rd	No. 778	Highet, John, Curtican, Ayr, Gelding, "Wardhead Eclipse" (G428).

CLASS 110. YELD MARE, FILLY, or GELDING, any age, in harness, not exceeding 14 hands, which has never won a First Prize exceeding the value of £10 at any Show prior to 1st January, 1925 (Sales excluded).—Premiums, £12, £8, £6, and £3.

1st	No. 784	Highet, John, Curtican, Ayr, Mare, "Queen of Trumps" (26,390).
2nd	No. 742	Beattie, James W., 122 Battlefield Road, Langside, Glasgow, Mare, "Holland Fumara" (25,672).
3rd	No. 670	Chassels, James R., 116 Maxwell Drive, Pollokshields, Glasgow, Mare, "Clyde Masque."
4th	No. 669	Chassels, James R., 116 Maxwell Drive, Pollokshields, Glasgow, Mare, "Inveresk Cat."

CONSOLATION CLASS.

CLASS 111. YELD MARE, FILLY, or GELDING, any height, drawn from foregoing Classes, and which has not won a Prize in Classes 105 to 110.—Premiums, £6, £4, £3, and £2.

1st No. 766 Kinross, William, 13 Clarendon Place, Stirling, Gelding, "Lochardil Orchid" (G249).
2nd No. 761 Chassels, James R., 116 Maxwell Drive, Pollokshields, Glasgow, Gelding, "Clyde Antonius."
3rd No. 772 Waddell, Robert, Bridge Street, Dollar, Gelding, "Jimmy."
4th No. 774 Beattie, James, W., 122 Battlefield Road, Langside, Glasgow, Gelding, "Lord Bobs."

DRAUGHT GELDINGS IN HARNESS.

PRESIDENT'S CHAMPION MEDAL for best Gelding in Harness.

No. 788 Fleming, James, Barns of Claverhouse, Dundee, "Utility."
Reserve—No. 791 Corporation of Glasgow, Cleansing Department, "What's Wanted."

CLASS 112. DRAUGHT GELDING, any age, in harness, shown in cart or lorry (and driven by single driver), it being a condition that the horse must have been regularly worked for a period of twelve weeks prior to the first day of the Show.—Premiums, £12, £10, £8, £6, £5, £4, £3, £2, £1.

1st No. 788 Fleming, James, Barns of Claverhouse, Dundee, "Utility."
2nd No. 791 Corporation of Glasgow, Cleansing Department, "What's Wanted."
3rd No. 798 Scottish Co-operative Wholesale Society, Ltd., Glasgow, "Dan."
4th No. 530 Clark, James, Netherlea, Cathcart, "Sandy."
5th No. 794 Corporation of Glasgow, Cleansing Department, "Sandy."
6th No. 789 Corporation of Glasgow, Cleansing Department, "Dandy."
7th No. 799 Scottish Co-operative Wholesale Society, Ltd., Glasgow, "Sandy."
8th No. 801 Scott's Shipbuilding & Engineering Co., Ltd., Greenock.
9th No. 792 Corporation of Glasgow, Cleansing Department, "Prince."

JUMPING COMPETITIONS.

Champion Prize of £10 *for the most points in Prizes with one or more Horses in Classes* 1, 2, *and* 3.

Taylor, Joseph, Moss Hall, Stretton, Warrington, 22 points.

CLASS 1. HORSE or PONY, any height.—Premiums, £20, £15, £10, £5, and £3.

1st Taylor, Joseph, Moss Hall, Stretton, Warrington, Gelding, "Jimmy."
2nd Taylor, Joseph, Moss Hall, Stretton, Warrington, Gelding, "Battleaxe."
3rd equal { Bradley, Ernest, Newton, Great Ayton, Mare, "Kitty."
4th Brown, Master J. A., Westerton, Killearn, Mare "Violet."
5th Young, A. R., 33 Carrick Street, Ayr, Gelding, "Raffles."

CLASS 2. HORSE or PONY, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the First Prize, and 4 inches for the winner of the Second Prize in Class 1.—Premiums, £10, £8, £5, £3, and £2.

1st Taylor, Joseph, Moss Hall, Stretton, Warrington, Gelding, "Battleaxe."
2nd Chassels, William, Athron Grange, Motherwell, Mare, "Rokena."
3rd Bradley, Ernest, Newton, Great Ayton, Mare, "Kitty."
4th Blakiston-Houston, George, Finlaystone, Langbank, Gelding, "Justice."
5th Brown, Master J. A., Westerton, Killearn, Mare, "Violet."

CLASS 3. HORSE or PONY, any height, Handicap, hurdles and gate being raised 8 inches for the winners of the First Prize and 4 inches for the winner of the Second Prize in either of Classes 1 or 2—4 inches extra for the winner of the two First Prizes in Classes 1 and 2.—Premiums, £10, £8, £5, £3, and £2.

1st Taylor, Joseph, Moss Hall, Stretton, Warrington, Gelding, "Battleaxe."
2nd Constable, Miss, Siolzarie, Blackwater, Blairgowrie, Gelding, "Joker."
3rd Taylor, Joseph, Moss Hall, Stretton, Warrington, Gelding, "Jimmy."
4th Andrews & Sons, Simon, Cardonald Grain Mills, Cardonald, Gelding, "The Wizard."
5th Allison, Frank, Newbiggin, Penrith, Gelding, "Nap."

CLASS 4. HUNTER, the property of a subscriber to any recognised pack of hounds in Scotland, and which has been fairly ridden to hounds in any country during season 1924-1925 by its owner.—Premiums, £10, £8, £5, £3, and £2.

1st Houison Craufurd, Mrs. E. L., Dunlop House, Dunlop, Gelding, "Doctor."
2nd Carnegie, R., Pitcorthie, Kilconquhar, Fife, Gelding, "Tarzan."
3rd Brown, Master J. A., Westerton, Killearn, Mare, "Violet."
4th Young, Miss Betty, 4 Gordon Street, Paisley, Gelding, "Rob Roy."
5th Blakiston-Houston, George, Finlaystone, Langbank, Gelding, "Justice."

CLASS 5. HORSE or PONY, any height.—Premiums, £10, £8, £5, £3, and £2.

1st Taylor, Joseph, Moss Hall, Stretton, Warrington, Gelding, "Battleaxe."
2nd Allison, Frank, Newbiggin, Penrith, Gelding, "Nap."
3rd Bradley, Ernest, Newton, Great Ayton, Mare, "Kitty."
4th Taylor, Joseph, Moss Hall, Stretton, Warrington, Gelding, "Jimmy."
5th equal Andrews & Sons, Simon, Cardonald Grain Mills, Cardonald, Gelding, "The Wizard."
Constable, Miss, Siolzarie, Blackwater, Blairgowrie, Gelding, "Joker."

SHEEP.

BLACKFACE.

PRESIDENT'S CHAMPION MEDAL for best animal of Blackface Breed.

No. 838 Hamilton, Matthew, G., Woolfords, Cobbinshaw.
Reserve—No. 810 Mitchell, Andrew, D., West Loch, Eddleston, "Sir Harry."

CLASS 113. TUP, above One Shear.—Premiums, £12, £8, £4, and £2.

1st	No. 810	Mitchell, Andrew D., West Loch, Eddleston, "Sir Harry."
2nd	No. 808	Hamilton, Matthew G., Woolfords, Cobbinshaw.
3rd	No. 803	Cadzow, Charles, Weston, Dunsyre.
4th	No. 813	Paton, Robert C., Lettre, Killearn, "Sir William."
V	No. 807	Hamilton, Matthew G., Woolfords, Cobbinshaw.
H	No. 809	Marshall & Mitchell, Bleaton, Blairgowrie, "Snowstorm."
C	No. 806	Dalziel, Ralph Kennedy, Overshiels, Stow.

CLASS 114. SHEARLING TUP.—Premiums, £12, £8, £4, and £2.

1st	No. 838	Hamilton, Matthew G., Woolfords, Cobbinshaw.
2nd	No. 829	Clark, James, Crossflatt, Muirkirk.
3rd	No. 834	Hamilton, Matthew G., Woolfords, Cobbinshaw.
4th	No. 835	Hamilton, Matthew G., Woolfords, Cobbinshaw.
V	No. 818	Burton, W., Auchtertyre, Tyndrum.
H	No. 820	Cadzow, Charles, Weston, Dunsyre.
C	No. 824	Cadzow, Trustees of the late James, Gavinburn Farm, Old Kilpatrick.
C	No. 828	Clark, James, Crossflatt, Muirkirk.
C	No. 837	Hamilton, Matthew G., Woolfords, Cobbinshaw.
C	No. 839	Marshall & Mitchell, Bleaton, Blairgowrie.

CLASS 115. SHEARLING TUP, which shall have been entirely outwintered, and not housed or house-fed at any time, and not clipped *before* 21st May, 1925.—Premiums, £12, £8, £4, and £2.

1st	No. 859	Howison, A. W., Rannagulzion, Blairgowrie.
2nd	No. 863	Novar Estates, Limited, Novar, Evanton, Ross shire.
3rd	No. 858	Howison, A. W., Rannagulzion, Blairgowrie.
4th	No. 855	Dalziel, Ralph Kennedy, Overshiels, Stow.
V	No. 849	Anderson, W. W., Colzium, Kirknewton.
H	No. 856	Dalziel, Ralph Kennedy, Overshiels, Stow.
C	No. 852	Cowan, Alexander, of Loganhouse, Penicuik.

CLASS 116. TUP LAMB.—Premiums, £5, £3, and £2.

1st	No. 869	Cadzow, Charles, Weston, Dunsyre.
2nd	No. 866	Anderson, William, Craigends, Fenwick.
3rd	No. 874	Marshall & Mitchell, Bleaton, Blairgowrie.
V	No. 875	Monkhouse, Octavius, Cowshill, Wearhead, Co. Durham.
H	No. 870	Cadzow, Charles, Weston, Dunsyre.
C	No. 867	Anderson, William, Craigends, Fenwick.

CLASS 117. EWE, above One Shear, with her Lamb at foot.—Premiums, £10, £5, and £2.

1st	No. 880	Anderson, William, Craigends, Fenwick, "Irene."
2nd	No. 879	Anderson, W. W., Colzium, Kirknewton, "Blackhope Belle."
3rd	No. 891	Monkhouse, Octavius, Cowshill, Wearhead, Co. Durham.

V	No. 877	Ancaster, The Earl of, Corrychrone, Callander, "Corrychrone Favourite."
H	No. 883	Browne, Major Alexander, Callaly Castle, Whittingham, Northumberland, "Callaly Cuckoo."
C	No. 881	Barbour, David, Airtnock, Fenwick, "Duchess."

CLASS 118. SHEARLING EWE or GIMMER.— Premiums, £10, £5, and £2.

1st	No. 905	Hamilton, Robert, Pool, Carnwath, "Favourite."
2nd	No. 906	Hamilton, Robert, Pool, Carnwath, "Favourite Sister."
3rd	No. 901	Craig, William, Fallside, Lamington, "Fallside Beauty."
V	No. 910	Rodger, John, North Southannan, Fairlie.
H	No. 909	Monkhouse, Octavius, Cowshill, Wearhead, Co. Durham, "Edinample Star."
C	No. 898	Anderson, William, Craigends, Fenwick.
C	No. 899	Barbour, David, Airtnock, Fenwick, "Sylvia."

CHEVIOT.

PRESIDENT'S CHAMPION MEDAL for best animal of the Cheviot Breed.

No. 970 Robson, John, Millknowe, Duns.
Reserve—No. 912 Elliot, Robert T., Chatto, Kelso.

Perpetual Challenge Cup, value £25, gifted by Mr. J. Borthwick, *for best Sheep in the Cheviot Classes*—given by Cheviot Sheep Society.

No. 970 Robson, John, Millknowe, Duns.

CLASS 119. TUP, above One Shear.—Premiums, £12, £8, £4, and £2.

1st	No. 912	Elliot, Robert T., Chatto, Kelso.
2nd	No. 915	Hogg, George, Penmanshiel, Grantshouse, "Excelsior."
3rd	No. 914	Elliot, Walter D., Dumfedling, Eskdalemuir, "White Cloud."
4th	No. 918	Thorburn & Grieve, Glenormiston, Innerleithen, "Hard Cash."
V	No. 916	Hogg, William, Newlands, Gifford.
H	No. 911	Elliot, Arthur, Hindhope, Jedburgh.
C	No. 913	Elliot, Robert T., Chatto, Kelso.

CLASS 120. SHEARLING TUP.—Premiums, £12, £8, £4, and £2.

1st	No. 934	Robson, John, Millknowe, Duns.
2nd	No. 937	Thorburn & Grieve, Glenormiston, Innerleithen, "Saint Ronan."
3rd	No. 923	Elliot, Arthur, Hindhope, Jedburgh.
4th	No. 927	Elliot, John, Blackhaugh, Clovenfords.
V	No. 928	Elliot, Robert T., Chatto, Kelso.
H	No. 935	Robson, John, Newton, Tarset, North Tyne.
C	No. 926	Elliot, John, Blackhaugh, Clovenfords.
C	No. 929	Elliot, Robert T., Chatto, Kelso.
C	No. 924	Elliot, Arthur, Hindhope, Jedburgh.

CLASS 121. TUP LAMB.—Premiums, £5, £3, and £2.

1st	No. 947	Hogg, George, Penmanshiel, Grantshouse.
2nd	No. 944	Elliot, John, Blackhaugh, Clovenfords.
3rd	No. 950	Mathison, William, Shoestanes, Heriot.
V	No. 945	Elliot, Robert T., Chatto, Kelso.
H	No. 953	Thorburn & Grieve, Glenormiston, Innerleithen.
C	No. 949	Mathison, William, Shoestanes, Heriot.

CLASS 122. EWE, above One Shear, with her Lamb at foot. Premiums, £10, £5, and £2.

1st	No. 957	Elliot, John, Blackhaugh, Clovenfords.
2nd	No. 956	Elliot, John, Blackhaugh, Clovenfords.
3rd	No. 959	Mathison, William, Shoestanes, Heriot.
V	No. 958	Mathison, William, Shoestanes, Heriot.
H	No. 954	Elliot, Arthur, Hindhope, Jedburgh.
C	No. 960	Robson, John, Millknowe, Duns.
C	No. 961	Robson, John, Millknowe, Duns.

CLASS 123. SHEARLING EWE or GIMMER.—Premiums, £10, £5, and £2.

1st	No. 970	Robson, John, Millknowe, Duns.
2nd	No. 972	Thorburn & Grieve, Glenormiston, Innerleithen.
3rd	No. 966	Elliot, Robert T., Chatto, Kelso.
V	No. 962	Elliot, Arthur, Hindhope, Jedburgh.
H	No. 964	Elliot, John, Blackhaugh, Clovenfords.
C	No. 973	Thorburn & Grieve, Glenormiston, Innerleithen.

BORDER LEICESTER.

PRESIDENT'S CHAMPION MEDAL for best animal of Border Leicester Breed.

No. 988 Dickinson, R. & W. B., Longcroft, Oxton, Berwickshire.

Reserve—No. 979 Moyes, William Cairns, Renmure, Inverkeilor, "Sandyknowe Record" (6728).

Gold Medal *for best Male animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock Book. Animals entered as "Extra Stock" not eligible.* Given by the Society of Border Leicester Sheep Breeders.

No. 988 Dickinson, R. & W. B., Longcroft, Oxton, Berwickshire.

CLASS 124. TUP, above One Shear.—Premiums, £12, £8, £4, and £2.

1st	No. 979	Moyes, William Cairns, Renmure, Inverkeilor, "Sandyknowe Record" (6728).
2nd	No. 977	Melrose, A. J., Heavyside, Biggar, "Ideal" (6306).
3rd	No. 980	Murray, R. G., & Son., Spittal, Biggar, "Framemaker" (6281).
4th	No. 978	Moyes, William Cairns, Renmure, Inverkeilor, "Westside Aristocrat" (5882).
V	No. 976	Macbeth, W. G., Dunira, Comrie, "Marcus James" (6346).
H	No. 974	Chalmers, William, Summerfield, Dumfries, "Elevator (6267).

CLASS 125. SHEARLING TUP.—Premiums, £12, £8, £4, and £2.

1st	No. 988	Dickinson, R. & W. B., Longcroft, Oxton, Berwickshire.
2nd	No. 1007	Stewart, John, Saughland, Tynehead.
3rd	No. 993	Howie, James, Hillhouse, Kilmarnock, "Ayr Pilot" (6498)
4th	No. 996	Kinnaird, John, Papple, Prestonkirk.
V	No. 995	Kinnaird, John, Papple, Prestonkirk.
H	No. 1000	Melrose, A. J., Heavyside, Biggar.
C	No 1001	Melrose, A. J., Heavyside, Biggar.
C	No. 1004	Murray, R. G., & Son, Spittal, Biggar.

Gold Medal *for best Female animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.* Given by the Society of Border Leicester Sheep Breeders.

No. 1012 Howie, James, Hillhouse, Kilmarnock, Y 10 (BL 452).

CLASS 126. EWE, above One Shear.—Premiums, £10, £5, and £2.

1st	No. 1012	Howie, James, Hillhouse, Kilmarnock, Y 10 (BL 452).
2nd	No. 1011	Dickinson, R. & W. B., Longcroft, Oxton, Berwickshire.
3rd	No. 1018	Niven, Alexander, Ayton, Newburgh, Fife.
V	No. 1015	Melrose, A. J., Heavyside, Biggar.
H	No. 1016	Moyes, William Cairns, Renmure, Inverkeilor.

CLASS 127. SHEARLING EWE or GIMMER.—
Premiums, £10, £5, and £2.

1st	No. 1031	Murray, R. G., & Son, Spittal, Biggar.
2nd	No. 1036	Young, John, Skerrington Mains, Hurlford, Ayrshire.
3rd	No. 1032	Murray, R. G., & Son, Spittal, Biggar.
V	No. 1022	Dickinson, R & W. B., Longcroft, Oxton, Berwickshire.
H	No. 1025	Dunlop, Quintin, Greenan, Ayr.
C	No. 1029	Melrose, A. J., Heavyside, Biggar.
C	No. 1034	Niven, Alexander, Ayton, Newburgh, Fife.

HALF-BRED.

PRESIDENT'S CHAMPION MEDAL for best Half-bred animal.

No. 1043 Elliot, John, Blackhaugh, Clovenfords.
Reserve—No. 1048 Dodds, William, Clarilaw, St. Boswells.

CLASS 128. TUP, above One Shear.—Premiums, £10, £7, and £3.

1st	No. 1037	Davidson, Richard, Swinnie, Jedburgh, "Tam."

CLASS 129. SHEARLING TUP.—Premiums, £10, £7, and £3

1st	No. 1043	Elliot, John, Blackhaugh, Clovenfords.
2nd	No. 1042	Elliot, Frank J., Crunklaw, Duns.
3rd	No. 1038	Armstrong, Thomas, East Cote, Hawick.
V	No. 1046	Hogg, Adam, Duncanlaw, Gifford.
H	No. 1044	Elliot, John, Blackhaugh, Clovenfords.
C	No. 1040	Dickinson, R. & W. B., Longcroft, Oxton, Berwickshire.

CLASS 130. EWE, above One Shear.—Premiums, £10, £5, and £2.

1st	No. 1048	Dodds, William, Clarilaw, St Boswells.
2nd	No. 1047	Dodds, William, Clarilaw, St Boswells.

CLASS 131. SHEARLING EWE or GIMMER.—
Premiums, £10, £5, and £2.

1st	No. 1049	Brown, A., Sandyknowe, Kelso.
2nd	No. 1050	Dodds, William, Clarilaw, St Boswells.
3rd	No. 1051	Dodds, William, Clarilaw, St Boswells.
H	No. 1052	Dodds, William, Clarilaw, St Boswells.

CLASS 132. THREE EWE LAMBS.—Premiums, £5, £3, and £2.

1st	No. 1053	Armstrong, Thomas, East Cote, Hawick.
2nd	No. 1056	Hogg, Adam, Duncanlaw, Gifford.
3rd	No. 1057	Hogg, George, Penmanshiel, Grantshouse.
V	No. 1054	Armstrong, Thomas, East Cote Hawick.
H	No. 1055	Elliot, Frank J., Crunklaw, Duns.

OXFORD DOWN.

PRESIDENT'S CHAMPION MEDAL for best Oxford Down animal.

No. 1064 Templeton, T. & M., Sandyknowe, Kelso.
Reserve—No. 1067 Graham, Robert, Kaimflat, Kelso.

Scottish Oxford Down Sheep Breeders' Challenge Cup, value £50, *for the best Oxford Down animal bred in Scotland*—given by Oxford Down Sheep Breeders' Association.

No. 1064 Templeton, T. & M., Sandyknowe, Kelso.

CLASS 133. SHEARLING TUP.—Premiums, £8, £5, and £3.

1st	No. 1064	Templeton, T. & M., Sandyknowe, Kelso.
2nd	No. 1061	Malcolm, William T., Whittingehame Mains, Prestonkirk.
3rd	No. 1060	Graham, Robert, Kaimflat, Kelso.
V	No. 1058	Dickinson, R. & W. B., Longcroft, Oxton, Berwickshire.
H	No. 1059	Graham, Robert, Kaimflat, Kelso.

CLASS 134. SHEARLING EWE or GIMMER.—Premiums, £8, £5, and £3.

1st	No. 1067	Graham, Robert, Kaimflat, Kelso.
2nd	No. 1071	Templeton, T. & M., Sandyknowe, Kelso.
3rd	No. 1066	Graham, Robert, Kaimflat, Kelso.
V	No. 1069	Malcolm, William T., Whittingehame Mains, Prestonkirk.
H	No. 1070	Templeton, T. & M., Sandyknowe, Kelso.

CLASS 135. TUP LAMB.—Premiums, £8, £5, and £3.

1st	No. 1077	Templeton, T. & M., Sandyknowe, Kelso.
2nd	No. 1074	Graham, Robert, Kaimflat, Kelso.
3rd	No. 1079	Templeton, T. & M., Sandyknowe, Kelso.
V	No. 1073	Graham, Robert, Kaimflat, Kelso.
H	No. 1078	Templeton, T. & M., Sandyknowe, Kelso.

CLASS 136. THREE EWE LAMBS.—Premiums, £8, £5, and £2.

1st	No. 1080	Graham, Robert, Kaimflat, Kelso.
2nd	No. 1082	Templeton, T. & M., Sandyknowe, Kelso.

SUFFOLK.

PRESIDENT'S CHAMPION MEDAL for best Suffolk Sheep.

No. 1089 Duncan, John Bryce, Newlands, Dumfries, "Hawk Eagle" (17,623).
Reserve—No. 1088 Taylor, J. P. Ross, Mungo's Walls, Duns.

Special Prizes of £7, 7s. and £3, 3s. *for best and second best group comprising Tup, Ewe, Tup Lamb, and Ewe Lamb entered in Classes,* 137, 138, 139, *and* 140, *all to be registered or eligible for registration in Flock-Book, and, with the exception of the Tup, bred by Exhibitor*—given by Mr. Dugald M'Kechnie, Glasgow.

1st—Taylor, J. P. Ross, Mungo's Walls, Duns, (1088, 1118, 1102, 1127).
2nd—Brook, Lieut.-Colonel Charles, of Kinmount, Annan (1083, 1091, 1105, 1120).

CLASS 137. TUP, One Shear and over.—Premiums, £8, £5, and £3.

1st	No. 1088	Taylor, J. P. Ross, Mungo's Walls, Duns.
2nd	No. 1083	Brook, Lieut.-Colonel Charles, of Kinmount, Annan, "Kinmount Energy."
3rd	No. 1084	Duncan, John Bryce, Newlands, Dumfries, "Mungo Chiel 2nd."
H	No. 1085	Hutton, Duncan F., Gibliston, Kilconquhar, "Mungo's Reservoir."

EXTRA STOCK.

The following was awarded the Silver Medal—

No. 1089 Duncan, John Bryce, Newlands, Dumfries, "Hawk Eagle" (17,623).

CLASS 138. SHEARLING EWE or GIMMER.—Premiums, £8, £5, and £3.

1st	No. 1092	Duncan, Commander J. A., Magungie, Arbroath.
2nd	No. 1093	Duncan, Commander J. A., Magungie, Arbroath.
3rd	No. 1091	Brook, Lieut.-Colonel Charles, of Kinmount, Annan.
V	No. 1102	Taylor, J. P. Ross, Mungo's Walls, Duns.
H	No. 1090	Brook, Lieut.-Colonel Charles, of Kinmount, Annan.
C	No. 1094	Duncan, John Bryce, Newlands, Dumfries.
C	No. 1098	Rintoul, William, Kilmux, Leven.

CLASS 139. TUP LAMB.—Premiums, £8, £5, and £3.

1st	No. 1109	Duncan, John Bryce, Newlands, Dumfries.
2nd	No. 1113	Prince-Smith, Sir Prince, Bart., Southburn, Driffield, East Yorks.
3rd	No. 1118	Taylor, J. P. Ross, Mungo's Walls, Duns.
V	No. 1105	Brook, Lieut.-Colonel Charles, of Kinmount, Annan.
H	No. 1115	Rintoul, William, Kilmux, Leven
C	No. 1112	Prince-Smith, Sir Prince, Bart., Southburn, Driffield, East Yorks.

CLASS 140. THREE EWE LAMBS.—Premiums, £8, £5, and £2.

1st	No. 1120	Brook, Lieut.-Colonel Charles, of Kinmount, Annan.
2nd	No. 1125	Rintoul, William, Kilmux, Leven.
3rd	No. 1127	Taylor, J. P. Ross, Mungo's Walls, Duns.
V	No. 1122	Duncan, John Bryce, Newlands, Dumfries.
H	No. 1124	Prince-Smith, Sir Prince, Bart., Southburn, Driffield, East Yorks.
C	No. 1121	Duncan, Commander J. A., Magungie, Arbroath.

SHROPSHIRE.

PRESIDENT'S CHAMPION MEDAL for best Shropshire Animal.

No. 1128 Buttar, T. A., Corston, Coupar-Angus.
Reserve—No. 1135 Buttar, T. A., Corston, Coupar-Angus.

CLASS 141. SHEARLING TUP.—Premiums, £6, £4, and £2.

1st	No. 1128	Buttar, T. A., Corston, Coupar-Angus.
2nd	No. 1131	Buttar, T. A., Corston, Coupar-Angus.
3rd	No. 1130	Buttar, T. A., Corston, Coupar-Angus.
V	No. 1129	Buttar, T. A., Corston, Coupar-Angus.
C	No. 1132	Grimond, John, Lornty Farm, Blairgowrie, "Flockie."
C	No. 1133	Grimond, John, Lornty Farm, Blairgowrie, "Stockie."

CLASS 142. SHEARLING EWE or GIMMER.—Premiums, £5, £3, and £2.

1st	No. 1135	Buttar, T. A., Corston, Coupar-Angus.
2nd	No. 1134	Buttar, T. A., Corston, Coupar-Angus.
3rd	No. 1136	Buttar, T. A., Corston, Coupar-Angus.
V	No. 1138	Grimond, John, Lornty Farm, Blairgowrie, "Tappie."

DORSET HORN.

PRESIDENT'S CHAMPION MEDAL for best Dorset Horn Animal.

No. 1140 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, Tup Lamb (451).

Reserve—No. 1142 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline (451).

CLASS 143. TUP, any age.—Premiums, £6, £4, and £2.

1st	No. 1140	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline.
2nd	No. 1139	Elgin and Kincardine, The Earl of, C.M.G., Broomhall. Dunfermline.
3rd	No. 1141	Elgin and Kincardine, The Earl of C.M.G., Broomhall, Dunfermline.

CLASS 144. EWE or GIMMER.—Premiums, £5, £3, and £2.

1st	No. 1142	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline.
2nd	No. 1143	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline.
3rd	No. 1145	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline.
V	No. 1144	Elgin and Kincardine, The Earl of, C.M G., Broomhall, Dunfermline.

EXTRA STOCK.

The following was awarded the Silver Medal—

No. 1146 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline.

FAT SHEEP

CLASS 145. THREE FAT LAMBS, any Breed or Cross, dropped in the year of the Show.—Premiums, £5, £3, and £2.

1st	No. 1150	Webb, Major W. Harcourt, Harcarse, Duns (Suffolk Tup and Half-bred Ewe).
2nd	No 1147	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline (Dorset Down Tup and Dorset Horn Ewe).
3rd	No. 1148	Elgin and Kincardine, The Earl of C.M.G., Broomhall, Dunfermline (Dorset Horn) (451).
H	No. 1149	Gilmour, Matthew, Inchinnan, Renfrew (Shropshire Tup and Half-bred Ewe).

GOATS.

PRESIDENT'S CHAMPION MEDAL for best animal in the Goat Classes.

No. 1178 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Swiss), "Dupplin Darling" (HB 6957).

Reserve—No. 1168 Swan, Miss Elinor, Swanston Cottage, Colinton, Midlothian (Toggenburg Type), "Charity" (KR 8968).

The Competition for Goats is recognised by the British Goat Society, which will give Challenge Certificates (qualifying for a Championship) :—

For the best Male Goat over one year.

No. 1155 Hamilton, Mrs. Ian, Strathleven, Dumbarton (Anglo-Nubian Swiss), "Cornish Bull's Eye" (6776).

For the best Female Goat over two years that has borne a kid.

No. 1168 Swan, Miss Elinor, Swanston Cottage, Colinton, Midlothian (Toggenburg Type), "Charity" (KR 8968).

For the best dual purpose Goat.

No. 1160 Blair, Mrs. W. E., Abbey View, Causewayhead, Stirling (British Saassen), "June Q*" (PRSR 98).

A Breed Challenge Certificate for the best Anglo-Nubian Female Goat over two years that has borne a kid.

No. 1158 Macdonald, Mrs. Sydney, Garrochty, Kingarth, Isle of Bute, "Herne Bay Dejah Thoris*" (AN 1342).

A Bronze Medal for the best Female exhibit in Classes 149, 150, 151, *and* 152.

No. 1178 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Swiss), "Dupplin Darling" (HB 6957).

A Bronze Medal for the best Male exhibit in Classes 146, 147, *and* 148.

No. 1155 Hamilton, Mrs. Ian, Strathleven, Dumbarton (Anglo-Nubian Swiss), "Cornish Bull's Eye" (6776).

Challenge Cup, value 20 Guineas, *for the best Female Goat in the Show*—given by Lord Dewar, London.

No. 1168 Swan, Miss Elinor, Swanston Cottage, Colinton, Midlothian (Toggenburg Type), "Charity" (KR 8968).

Challenge Cup, value £10, *for the best Female Anglo-Nubian Goat over two years old, in milk, entered in the Anglo-Nubian Section of the Herd-Book, "Extra Stock" being eligible to compete*—given by Mrs. S. Macdonald, Garrochty.

No. 1158 Macdonald, Mrs. Sydney, Garrochty, Kingarth, Isle of Bute, "Herne Bay Dejah Thoris*" (AN 1342).

CLASS 146. MALE GOAT, any variety, over Two Years.—Premiums, £3, £2, and £1.

(*Not forward.*)

CLASS 147. MALE GOAT, any variety, over One but not exceeding Two Years.—Premiums, £3, £2, and £1.

1st No. 1155 Hamilton, Mrs. Ian, Strathleven, Dumbarton (Anglo-Nubian Swiss), "Cornish Bull's Eye" (6776).

2nd No. 1154 Graham, Lady Helen, Buchanan Castle, Drymen, Glasgow (Anglo-Nubian Swiss), "†Cornish Grym" (HB 6715).

CLASS 148. MALE KID, any variety, not exceeding One Year. Premiums, £3, £2, and £1.

3rd No. 1157 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Swiss), "Dupplin Desmond" (HB 7015).

CLASS 149. FEMALE GOAT, Anglo-Nubian, in Milk.—Premiums, £3, £2, and £1.

1st No. 1158 Macdonald, Mrs. Sydney, Garrochty, Kingarth, Isle of Bute, "Herne Bay Dejah Thoris*" (AN 1342).

2nd No. 1159 Macdonald, Mrs. Sydney, Garrochty, Kingarth, Isle of Bute, "Garrochty Luxor" (AN 1544).

CLASS 150. FEMALE GOAT, any other variety, in Milk.—Premiums, £3, £2, and £1.

1st No. 1168 Swan, Miss Elinor, Swanston Cottage, Colinton, Midlothian (Toggenburg Type), "Charity" (KR 8968).

2nd No. 1160 Blair, Mrs. W. E., Abbey View, Causewayhead, Stirling (British Saassen), "June Q*" (Q* PRSR 98).

3rd No. 1167 Macdonald, Mrs. Sydney, Garrochty, Kingarth, Isle of Bute (Swiss), "Riding Titania."

V No. 1164 Graham, Lady Helen, Buchanan Castle, Drymen, Glasgow (Anglo-Nubian Swiss), "Contadina of Buchanan" (HB 4325).

H No. 1163 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Nubian Swiss), "Dupplin Duchess" (HB 5878).

CLASS 151. GOATLING, any variety, over One but not exceeding Two Years.—Premiums £3, £2, and £1.

1st No. 1170 Graham, Lady Helen, Buchanan Castle, Drymen, Glasgow (Anglo-Nubian Swiss), "Gadabout of Buchanan" (HB 6445).

2nd No. 1172 Graham, Lady Helen, Buchanan Castle, Drymen, Glasgow (Anglo-Nubian Swiss), "Gem of Buchanan" (HB 6471).

3rd No. 1169 Blair, Andrew J., jun., Geilston, Cardross, Dumbartonshire (Anglo-Nubian-Swiss), "Comely" (HB 7030).

CLASS 152. FEMALE KID, any variety, not exceeding One Year—Premiums, £3, £2, and £1.

1st No. 1178 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Swiss), "Dupplin Darling" (HB 6957).

2nd No. 1176 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Swiss), "Dupplin Dimple" (HB 6962).

3rd No. 1175 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Swiss), "Dupplin Deborah" (HB 6961).

V No. 1177 Forteviot, Lady, Dupplin Castle, Perth (Anglo-Swiss), "Dupplin Dulcie" (HB 6964).

CLASS 153. MILKING COMPETITION, for quantity, open to Classes 149 and 150.—Premiums, £3, £2, and £1.

1st No. 1160 Blair, Mrs. W. E., Abbey View, Causewayhead, Stirling (British Saassen), "June Q*" (PRSR 98).

2nd No. 1161 Blair, Mrs. W. E., Abbey View, Causewayhead, Stirling (Anglo-Nubian Saassen), "Cream Daisy" (HB 6223).

PIGS.

LARGE WHITE.

PRESIDENT'S CHAMPION MEDAL for best Large White Pig.

No. 1201 Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh, "Dalmeny Queen" (89,850).
Reserve—No. 1195 Chivers & Sons, Limited, Histon, Cambridge, "Histon Belle 63rd" (105,958).

Gold Medal, value £5, *for the best Large White Boar in the Show*—given by the National Pig Breeders' Association.

No. 1182 Chivers & Sons, Limited, Histon, Cambridge, "Histon Wonder (33,677).

CLASS 154. BOAR, born before 1924.—Premiums, £8, £4, and £2.

1st No. 1182 Chivers & Sons, Limited, Histon, Cambridge, "Histon Wonder" (33,677).
2nd No. 1183 M'Naughton Brothers, Rogerfield, Baillieston, "King of Rogerfield" (37,267).

CLASS 155. BOAR, born in 1924.—Premiums, £8, £4, and £2.

1st No. 1187 Stair, The Earl of, Lochinch Castle, Stranraer, "Wallace of Kiltane."
2nd No. 1186 Douglas, Mrs. A. I., Auchlochan, Lesmahagow, "Welland Bob 3rd" (93,782).

CLASS 156. BOAR, born in 1925.—Premiums, £6, £3, and £1.

1st No. 1194 Wallace, Captain A. A., Halbeath House, Halbeath, Dunfermline (Ear No. 182)
2nd No. 1189 M'Naughton Brothers, Rogerfield, Baillieston (Ear No. 170).
3rd No. 1190 M'Naughton Brothers, Rogerfield, Baillieston (Ear No. 174).
V No. 1188 Forteviot, Lord, Dupplin Castle, Perth, "Dupplin Benefactor."

Gold Medal, value £5, *for the best Large White Sow in the Show*—given by the National Pig Breeders' Association.

No. 1201 Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh, "Dalmeny Queen" (89,850).

CLASS 157. SOW, born before 1924.—Premiums, £8, £4, and £2.

1st No. 1195 Chivers & Sons, Limited, Histon, Cambridge, "Histon Belle 3rd" (105,958)
2nd No. 1198 Forteviot, Lord, Dupplin Castle, Perth, "Dupplin Perfection" (78,284).
3rd No. 1199 Hunter, James B., Strandhead, Tarbolton, "Queenie."
V No. 1200 Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh, "Caldmore Merry Legs 3rd" (89,270).
H No. 1197 Douglas, Mrs. A. I., Auchlochan, Lesmahagow, "Auchlochan Dot 3rd" (76,528).

EXTRA STOCK.

The following was awarded the Silver Medal—

No. 1201 Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh, "Dalmeny Queen" (89,850).

CLASS 158. SOW, born in 1924.—Premiums, £8, £4, and £2.

1st No. 1204 Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Gogar Betsy" (Ear No. 246).
2nd No. 1205 Forteviot, Lord, Dupplin Castle, Perth, "Dupplin Cinderella."
3rd No. 1202 Chivers & Sons, Limited, Histon, Cambridge, "Histon Lily 59th."
V No. 1207 Stirling, The Hon. Mrs. of Keir, Cawder House, Bishopbriggs, "Cawder Mira."

CLASS 159. SOW, born in 1925.—Premiums, £6, £3 , and £1.

1st No. 1212 Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh, "Dalmeny Maple Leaf 20th."
2nd No. 1209 Forteviot, Lord, Dupplin Castle, Perth, "Dupplin Perfection 19th."
3rd No. 1211 M'Naughton Brothers, Rogerfield, Baillieston (Ear No. 172).
H No. 1210 Forteviot, Lord, Dupplin Castle, Perth, "Dupplin Perfection 21st."

MIDDLE WHITE.

PRESIDENT'S CHAMPION MEDAL for best Middle White Pig.

No. 1230 Chivers and Sons, Limited, Histon, Cambridge, "Hawthorn Lady Holly 2nd" (116,906).
Reserve—No. 1219 Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh, "Midlothian Reveller" (45,305).

Gold Medal, value £5, *for the best Middle White Boar in the Show*—given by the National Pig Breeders' Association.

No. 1219 Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh, "Midlothian Reveller" (45,305).

CLASS 160. BOAR, any age.—Premiums, £8, £4, and £2.

1st No. 1218 Wallace, Captain A. A., Halbeath House, Halbeath, Dunfermline, "Colonel of Bob" (49,603).
2nd No. 1216 Monteith, Major, Cranley, Carstairs, "Bantaskin Chieftain."
3rd No. 1217 Monteith, Major, Cranley, Carstairs, "Cranley Eleazer."
V No. 1214 Alexander, William, Banknock House, Banknock, Stirlingshire, "Midlothian Roselad" (45,309).

EXTRA STOCK.

The following was awarded the Silver Medal—

No. 1219 Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh, "Midlothian Reveller" (45,305).

CLASS 161. BOAR, born in 1925.—Premiums, £6, £3, and £1.

1st No. 1224 Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh.
2nd No. 1221 Hicks & Sons, High Fordon, Hunmanby, "Fordon Valorous 5th."
3rd No. 1223 Monteith, Major, Cranley, Carstairs, "Cranley Monarch."

Gold Medal, value £5, *for the best Middle White Sow in the Show*—given by the National Pig Breeders' Association.

No. 1230 Chivers & Sons, Limited, Histon, Cambridge, "Hawthorn Lady Holly 2nd" (116,906).

CLASS 162. SOW, born before 1924.—Premiums, £8, £4, and £2.

1st	No. 1230	Chivers & Sons, Limited, Histon, Cambridge, "Hawthorn Lady Holland 2nd" (116,906).
2nd	No. 1228	Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Norsbury Welcome IV." (120,936).
3rd	No. 1236	Wallace, Captain A. A., Halbeath House, Halbeath, Dunfermline, "Halbeath Victoria 3rd" (116,386).
V	No. 1235	Stair, The Earl of, Lochinch Castle, Stranraer, "Beauty 3rd" (116,612).
H	No. 1234	Stair, The Earl of, Lochinch Castle, Stranraer, "Madeley Pansy" (98,438).
C	No. 1233	Monteith, Major, Cranley, Carstairs, "Cranley May."

CLASS 163. SOW, born in 1924.—Premiums, £8, £4, and £2.

1st	No. 1238	Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh, "Midlothian Rose 20th."
2nd	No. 1239	Stair, The Earl of, Lochinch Castle, Stranraer, "Godmersham Peeress 7th."
3rd	No. 1241	Stair, The Earl of, Lochinch Castle, Stranraer, "Cromlie Tansy."

CLASS 164. SOW, born in 1925.—Premiums, £6, £3, and £1.

1st	No. 1243	Hicks & Sons, High Fordon, Hunmanby, "Fordon Veronica 9th."

BERKSHIRE.

PRESIDENT'S CHAMPION MEDAL for best Berkshire Pig.

No. 1254 Bishop, A. Henderson, Thorntonhall Home Farm, Thorntonhall Station, Glasgow, "Thorntonhall Charming"

Reserve—1248 Graham, Mrs, Ibrox Farm, Ibrox, Glasgow, "Thorntonhall Jack"

CLASS 165. BOAR, any age.—Premiums, £8, £4, and £2.

1st	No. 1248	Graham, Mrs., Ibrox Farm, Ibrox, Glasgow, "Thorntonhall Jack."

CLASS 166. BOAR, born in 1925.—Premiums, £6, £3, and £1.

1st	No. 1250	Bishop, A. Henderson, Thorntonhall Home Farm, Thorntonhall Station, Glasgow, "Thorntonhall Dhole.".

CLASS 167. SOW, any age.—Premiums, £8, £4, and £2.

1st	No. 1254	Bishop, A. Henderson, Thorntonhall Home Farm, Thorntonhall Station, Glasgow, "Thorntonhall Charming."
2nd	No. 1255	Bishop, A. Henderson, Thorntonhall Home Farm, Thorntonhall Station, Glasgow, "Thorntonhall Feer I."

CLASS 168. SOW, born in 1925.—Premiums, £6, £3, and £1.

(Not Forward.)

LARGE BLACK.

PRESIDENT'S CHAMPION MEDAL for best Large Black Pig.

No. 1260 Duncan, J. Bryce, Newlands, Dumfries, "Newacre Active 2nd" (26,805).
Reserve—No. 1281 Duncan, J. Bryce, Newlands, Dumfries, "Tartar Daffodil" (90,722).

Champion Cup, value £10, 10s., *for the best Large Black animal exhibited, "Extra Stock" being eligible to compete*—given by the Large Black Pig Society.

No. 1260 Duncan, J. Bryce, Newlands, Dumfries, "Newacre Active 2nd" (26,805).

CLASS 169. BOAR, born before 1924.—Premiums, £8, £4, and £2.

1st No. 1260 Duncan, J. Bryce, Newlands, Dumfries, "Newacre Active 2nd" (26,805).
2nd No. 1263 Woolland, Walter, Baydon Manor, Ramsbury, Wiltshire, "Valley General 2nd" (25,401).
3rd No. 1262 Russell-Fergusson, Mrs. H., Ardtur, Appin, Argyll, "Douglas Newpark 6th" (28,335).
V No. 1261 Dykes, Major H. Ballantine, D.S.O., Ewe Close Farm, Aspatria, Cumberland, "Tinten Jock" (25,719).
H No. 1259 Cunningham, Henry, Dolphingstone, Tranent, East Lothian, "Park Premier 1st" (18,727).

CLASS 170. BOAR, born in 1924.—Premiums, £8, £4, and £2.

1st No. 1264 Adam, James, Park, Nairn, "Park Ringleader 2nd" (A 1253).
2nd No. 1268 Ovenstone, William, Craighill, Dundee, "Newacre Amiable Boy" (A 173)
3rd No. 1265 Dykes, Major H., Ballantine, D.S.O., Ewe Close Farm, Aspatria, Cumberland, "Westpetherwin Colonel" (A 797).
V No. 1266 Hunter, George, 22 Devonview, Devonside, Tillicoultry, "Ochil Sambo" (A 1093).

CLASS 171. BOAR, born in 1925.—Premiums, £6, £3, and £1.

1st No. 1272 Duncan, J. Bryce, Newlands, Dumfries, "Newacre Active Lad 2nd" (B 167).
2nd No. 1270 Beaton, James, Hallroom, Guildtown, Perth, "Hallroom Jock."
3rd No. 1271 Duncan, J. Bryce, Newlands, Dumfries, "Newacre Active Lad" (B 147).
V No. 1269 Adam, James, Park, Nairn, "Park Reserve 2nd."
H No. 1273 M'Caig & Goodchild, Foreside of Cairn, Kirriemuir, "Yam Archer 1st" (B 137).
C No. 1274 M'Caig & Goodchild, Foreside of Cairn, Kirriemuir, "Yam Lightning 2nd" (B 139).

CLASS 172. SOW, born before 1924.—Premiums, £8, £4, and £2.

1st No. 1281 Duncan, J. Bryce, Newlands, Dumfries, "Tartar Daffodil" (90,722).
2nd No. 1282 Hamilton of Dalzell, Lord, K.T., Dalzell Home Farm, Motherwell, "Dalzell Cassandra" (97,970).
3rd No. 1278 Beaton, James, Hallroom, Guildtown, Perth, "Hallroom Agnes" (127,574).
V No. 1280 Brook, Lieut.-Colonel Charles, of Kinmount, Annan, "Kingston Sunset" (80,726).
H No. 1284 Tullibody Land Co., Limited, The, Brackenbrae Pig Farms, Tullibody, Clackmannanshire, "Vahan Beauty 50th" (73,202).

C No. 1277 Adam, James, Park, Nairn, "Swardeston Diamond" (99,418).
C No. 1279 Brook, Lieut.-Colonel Charles, of Kinmount, Annan, "Kinmount Senora 15th" (80,126).

CLASS 173. SOW, born in 1924.—Premiums, £8, £4, and £2.

1st No. 1296 Woolland, Walter, Baydon Manor, Ramsbury, Wiltshire, "Baydon Nightingale 7th" (A 2772).
2nd No. 1288 Hamilton of Dalzell, Lord, K.T., Dalzell Home Farm, Motherwell, "Yam Bridget 2nd" (A 230).
3rd No. 1290 M'Caig & Goodchild, Foreside of Cairn, Kirriemuir, "Yam Eliza 1st" (A 228).
V No. 1286 Duncan, J. Bryce, Newlands, Dumfries, "Newacre Tartaretta 4th" (A 2330).
H No. 1287 Dykes, Major H. Ballantine, D.S.O., Ewe Close Farm, Aspatria, Cumberland, "Wardhall Josephine" (A 846).
C No. 1294 Ovenstone, William, Craighill, Dundee, "Newacre Princess" (A 2632).

CLASS 174. SOW, born in 1925.—Premiums, £6, £3, and £1.

1st No. 1299 Duncan, J. Bryce, Newlands, Dumfries, "Newacre Dauntless Lady" (B 248).
2nd No. 1302 M'Caig & Goodchild, Foreside of Cairn, Kirriemuir, "Yam Annette 2nd" (B 216).
3rd No. 1298 Cunningham, Henry, Dolphingstone, Tranent, East Lothian, "Dolphingstone Senora 1st."
V No. 1297 Adam, James, Park, Nairn, "Park Garbitas 3rd."
H No. 1303 M'Caig & Goodchild, Foreside of Cairn, Kirriemuir, "Yam Lassie 2nd" (B 220).
C No. 1300 Hunter, George, 22 Devonview, Devonside, Tillicoultry, "Ochil Lily I."

CUMBERLAND.

PRESIDENT'S CHAMPION MEDAL for best Cumberland Pig.

No. 1305 Jordan, John S., Bowston, Kendal, "Bowston Financier" (5750).
Reserve—No. 1312 Jordan, John S., Bowston, Kendal, "Janet II." (4169).

CLASS 175. BOAR, any age.—Premiums, £8, £4, and £2.

1st No. 1305 Jordan, John S., Bowston, Kendal, "Bowston Financier" (5750).
2nd No. 1304 Jordan, John S., Bowston, Kendal, "Bleatarn Excelsior" (4473).

CLASS 176. BOAR, born in 1925.—Premiums, £6, £3, and £1.

1st No. 1309 Jordan, John S., Bowston Kendal, "Bowston Gerald" (G 50).
2nd No. 1307 Jordan, John S., Bowston, Kendal, "Bowston General" (G 14).

CLASS 177. SOW, any age.—Premiums, £8, £4, and £2.

1st No. 1312 Jordan, John S., Bowston, Kendal, "Janet II." (4169).
2nd No. 1313 Jordan, John S., Bowston, Kendal, "Witch of Ashes" (4400).
3rd No. 1314 Jordan, John S., Bowston, Kendal, "Bowston Folly"

CLASS 178. SOW, born in 1925.—Premiums, £6, £3, and £1.

1st No. 1317 Jordan, John S., Bowston, Kendal, "Bowston Graceful" (G 19).
2nd No. 1318 Jordan, John S., Bowston, Kendal, "Bowston Gracious Gift" (G 21).

LARGE WHITE ULSTER.

PRESIDENT'S CHAMPION MEDAL for best Large White Ulster Pig.

No. 1356 Short, James, Wood Park, Anney, Beragh, Co. Tyrone, "Wood Park Bit of Quality" (5308).

Reserve—No. 1340 M'Elroy, William J., Rossdowney House, Londonderry, "Rossdowney Swank" (5346).

CLASS 179. BOAR, born before 1st September, 1924.—Premiums, £8, £4, and £2.

1st No. 1326 Short, James, Wood Park, Anney, Beragh, Co. Tyrone, "Tullyglush Defender" (3179).

2nd No. 1323 Gordon, William, Coolsyth, Randalstown, Co. Antrim, "Woodpark Golden Crown" (3467).

3rd No. 1322 Doloughan, W. J. A., The Bungalow, Donacloney, Lurgan, Co. Armagh, "Secret of Wood Park" (3783).

H No. 1324 Hart, Lieut.-Colonel G. V., D.L., Kilderry, Londonderry, "Kilderry Bushranger" (3671).

C No. 1325 Robertson, Miss Dorothy, Dogleap, Limavady, Co. Londonderry, "Wood Park Loyal Prince" (4263).

CLASS 180. BOAR, born on or after 1st September, 1924.—Premiums, £6, £3, and £1.

1st No. 1331 M'Elroy, William J., Rossdowney House, Londonderry, "Woodpark Secret Defender" (4433).

2nd No 1327 Bell, Robert W., Fruithill, Hillsborough, Co. Down, "Fruithill Majestic" (4575).

3rd No 1329 Hart, Lieut.-Colonel G. V., D.L., Kilderry, Londonderry, "Kilderry Woodland Champion" (4571).

H No 1335 Short, James, Wood Park, Anney, Beragh, Co. Tyrone, "Woodpark Favourite Lad."

C No. 1330 Lindsay, Thomas, Derryboy, Crossgar, Co. Down, "Wood Park Golden Chime" (4437).

C No. 1336 Smyth, William Robert, Ballyalgin, Crossgar, Co. Down, "Ballyalgin Leader" (4545).

CLASS 181. SOW, born before 1st September, 1924.—Premiums, £8, £4, and £2.

1st No. 1340 M'Elroy, William J., Rossdowney House, Londonderry, "Rossdowney Swank" (5346).

2nd No. 1343 Short, James, Wood Park, Anney, Beragh, Co. Tyrone, "Fancy of Wood Park" (4576).

3rd No. 1344 Smyth, William Robert, Ballyalgin, Crossgar, Co. Down, "Ballyalgin Cherry Blossom" (5298).

H No. 1339 Lindsay, Thomas, Derryboy, Crossgar, Co. Down, "Ulster Sunshine" (5366).

C No. 1341 M'Elroy, William J., Rossdowney House, Londonderry, "Rossdowney Loyalist" (5278).

CLASS 182. SOW, born on or after 1st September, 1924.—Premiums, £6, £3, and £1.

1st No. 1356 Short, James, Wood Park, Anney, Beragh, Co. Tyrone, "Wood Park Bit of Quality" (5308).

2nd No. 1348 Gabbie, William, Ballywoollen, Crossgar, Co. Down, "Ballywoollen Eve" (5320).

3rd No. 1347 Gabbie, William, Ballywoollen, Crossgar, Co. Down, "Ballywoollen Bella" (5318).

V No. 1359 Smyth, William Robert, Ballyalgin, Crossgar, Co Down, "Ballyalgin Duchess" (5302).

H No. 1346 Doloughan, W. J. A., The Bungalow, Donacloney, Lurgan, Co. Armagh, "Summerhill Queen" (5248).

C No. 1358 Smyth, William Robert, Ballyalgin, Crossgar, Co. Down, "Ballyalgin Colleen" (5304).

POULTRY.

First Premium—*One Sovereign.* Second Premium, *Ten Shillings.* In each class where there are Four or more entries. Third Premium—*Five Shillings.*

Champion Challenge Bowl, value £50, *for the best exhibit in the Poultry Classes*—given by the Proprietors of *The Scottish Poultry News*, Aberdeen.

No. 195 Weir, John, Midtown, New Abbey Road, Dumfries.

CHAMPION MEDALS.

1. *Best Cock, any variety.*

No. 312 Aitkenhead, Charles, Carr House Farm, New Seaham.

2. *Best Hen, any variety.*

No. 130 Reid, David, Firthview, Portgordon.

3. *Best Cockerel, any variety.*

No. 195 Weir, John, Midtown, New Abbey Road, Dumfries

4. *Best Pullet, any variety.*

No. 63 Binnie, William, Garth House, Denny.

5. *Best Waterfowl.*

No. 498 Dalgleish, James P., of West Grange, East Grange Station, Dunfermline.

6. *Best Turkey.*

No. 538 Shewan, Alexander, South Percyhorner, Fraserburgh.

CLASS 1. LEGHORN—White—Cock.

1st No. 2 Binnie, William, Garth House, Denny.
2nd No. 3 Weir, James, Brickhouse, New Abbey Road, Dumfries.

CLASS 2. LEGHORN—White—Hen.

1st No. 5 Binnie, William, Garth House, Denny.
2nd No 7 Weir, James, Brickhouse, New Abbey Road, Dumfries.

CLASS 3. LEGHORN—White—Cockerel.

1st No. 9 Binnie, William, Garth House, Denny.
2nd No. 13 Weir, James, Brickhouse, New Abbey Road, Dumfries.
3rd No. 10 Borthwick, Hugh, Crossburn, Peebles.
V No. 11 Cuthbertson, Andrew, 12 St Andrews Road, Peebles.

CLASS 4. LEGHORN—White—Pullet.

1st No. 19 Weir, James, Brickhouse, New Abbey Road, Dumfries.
2nd No. 14 Benson Brothers, Sunnyside, Dalbeattie.
3rd No. 15 Binnie, William, Garth House, Denny.
V No. 16 Borthwick, Hugh, Crossburn, Peebles.
H No. 17 Cuthbertson, Andrew, 12 St Andrews Road, Peebles.

CLASS 5. LEGHORN—Any other Colour—Cock.

1st No. 21 Brown, Charles, Ivybank, Kintore (Brown).

CLASS 6. LEGHORN—*Any other Colour—Hen.*

1st	No. 30	**Salmond, James B., The *Glen, Glencraig, Fife (Black).***
2nd	No. 25	**Brown, Charles, Ivybank, Kintore (Brown).**
3rd	No. 26	**Brownlie, J. W., Garfield Poultry Yards, Newmains (Black).**
V	No. 29	**Salmond, James B., The Glen, Glencraig, Fife (Black).**
H	No. 31	**Sinclair, Ian, Fern Cottage, Inverurie (Black).**
C	No. 32	**Williamson Brothers, East Lochran, Blairadam (Blue).**

CLASS 7. LEGHORN—Any other Colour—Cockerel.

1st	No. 37	**Salmond, James B., The Glen, Glencraig, Fife (Black).**
2nd	No. 38	**Salmond, James B., The Glen, Glencraig, Fife (Black).**
3rd	No. 34	**Ferries, Robert, Harthill, Countesswells, Aberdeenshire (Brown).**
V	No. 35	**Forrett, Will, Rose Cottage, Dalbeattie (Brown).**
H	No. 36	**Nicholl, J. M., Braehead Farm, Paisley (Exchequer).**

CLASS 8. LEGHORN—Any other Colour—Pullet.

1st	No. 42	**Salmond, James B., The Glen, Glencraig, Fife (Black).**
2nd	No. 40	**Salmond, James B., The Glen, Glencraig, Fife (Black).**
3rd	No. 39	**Forrett, Will, Rose Cottage, Dalbeattie (Duckwing).**
V	No. 41	**Salmond, James B., The Glen, Glencraig, Fife (Black).**

CLASS 9. MINORCA—Cock.

1st	No. 44	**Binnie, William, Garth House, Denny.**
2nd	No. 47	**Nelson, Alexander, Craigness, Boglity Road, Kirkcaldy.**
3rd	No. 46	**Nelson, Alexander, Craigness, Boglity Road, Kirkcaldy.**
V	No. 49	**Weir, James, Brickhouse, New Abbey Road, Dumfries.**
H	No. 48	**Templeton, George Knowe Farm, Auchinleck.**

CLASS 10. MINORCA—Hen.

1st	No. 50	**Binnie, William, Garth House, Denny.**
2nd	No. 55	**Weir, James, Brickhouse, New Abbey Road, Dumfries.**
3rd	No. 51	**Crawford, John, Kingston Cottage, Hurlford, Ayrshire.**
V	No. 52	**Nelson, Alexander, Craigness, Boglity Road, Kirkcaldy.**
H	No. 54	**Thomson, John, Middleholm Cottage, Lesmahagow.**
C	No 53	**Templeton, George, Knowe Farm, Auchinleck.**

CLASS 11. MINORCA—Cockerel.

1st	No. 62	**Weir, James, Brickhouse, New Abbey Road, Dumfries.**
2nd	No. 57	**Binnie, William, Garth House, Denny.**
3rd	No. 61	**Thomson, John, Middleholm Cottage, Lesmahagow.**
V	No. 58	**Macgregor, James Scott, Bridgend Bakery, Greenlaw.**
H	No. 60	**Nelson, Alexander, Craigness, Boglity Road, Kirkcaldy.**

CLASS 12. MINORCA—Pullet.

1st	No. 63	**Binnie, William, Garth House Denny.**
2nd	No. 66	**Weir, James, Brickhouse, New Abbey Road, Dumfries.**
3rd	No. 64	**Macgregor, James Scott, Bridgend Bakery, Greenlaw.**
V	No. 65	**Thomson, John, Middleholm Cottage, Lesmahagow.**

CLASS 13. SCOTCH GREY—Cock.

1st	No. 71	**Watson, William, Cawdor Home Farm, Nairn.**
2nd	No. 69	**Ramsay, William, Muirhouse, Crosshouse.**
3rd	No. 70	**Watson, John, Braefoot, Caldereruix.**
V	No. 72	**Watson, William, Cawdor Home Farm, Nairn.**
H	No. 67	**Carswell, John, 148 Grahams Road, Falkirk.**
C	No. 68	**Fitzpatrick, James, Castlehill, Larbert.**

CLASS 14. SCOTCH GREY—Hen.

1st	No. 75	Hamilton, Miss Ina, Holehouse, Neilston.
2nd	No. 73	Carswell, John, 148 Grahams Road, Falkirk.
3rd	No. 80	Watson, William, Cawdor Home Farm, Nairn.
V	No. 76	Ramsay, William, Muirhouse, Crosshouse.
H	No. 78	Ramsay, William, Muirhouse, Crosshouse.
C	No. 77	Ramsay, William, Muirhouse, Crosshouse.

CLASS 15. SCOTCH GREY—Cockerel.

1st	No. 84	Watson, William, Cawdor Home Farm, Nairn.
2nd	No. 83	Ramsay, William, Muirhouse, Crosshouse.

CLASS 16. SCOTCH GREY—Pullet.

1st	No. 86	Ramsay, William, Muirhouse, Crosshouse.

CLASS 17. PLYMOUTH ROCK—Barred—Cock.

1st	No. 88	Logan, James, Lauder Place, East Linton.
2nd	No. 91	Milliken Stock Nurseries, Johnstone, Renfrewshire.
3rd	No. 90	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.
V	No. 92	Slater, Matthew, Redwell Poultry Farm, Carnforth.

CLASS 18. PLYMOUTH ROCK—Barred—Hen.

1st	No. 95	Milliken Stock Nurseries, Johnstone, Renfrewshire.
2nd	No. 94	M'Gillivray, James, Drumbreck, Kirkintilloch.
3rd	No. 93	Logan, James, Lauder Place, East Linton.
V	No. 96	Ramsay, William, Muirhouse, Crosshouse.

CLASS 19. PLYMOUTH ROCK—Barred—Cockerel.

1st	No. 97	Milliken Stock Nurseries, Johnstone, Renfrewshire.

CLASS 20. PLYMOUTH ROCK—Barred—Pullet.

1st	No. 99	Ramsay, William, Muirhouse, Crosshouse.
2nd	No. 98	Milliken Stock Nurseries, Johnstone, Renfrewshire.

CLASS 21. PLYMOUTH ROCK—Any other Colour—Cock or Cockerel.

1st	No. 108	Morgan, William, Balcurvie, Windygates, Fife (Cock, White).
2nd	No. 107	Milliken Stock Nurseries, Johnstone, Renfrewshire (Cock, Buff).
3rd	No. 105	M'Gillivray, James, Drumbreck, Kirkintilloch (Cockerel, Buff).
V	No. 109	Slater, Matthew, Redwell Poultry Farm, Carnforth (Cockerel, Buff).
H	No. 100	Carr, Robert T., Keswick House, Annan (Cock, White).
C	No. 101	Clark, Mrs. H. C., Station House, Cullen (Cock, White).

CLASS 22. PLYMOUTH ROCK—Any other Colour—Hen or Pullet.

1st	No. 116	Milliken Stock Nurseries, Johnstone, Renfrewshire (Hen, Buff).
2nd	No. 110	Carr, Robert T., Keswick House, Annan (Hen, White).
3rd	No. 117	Slater, Matthew, Redwell Poultry Farm, Carnforth (Pullet, Buff).
V	No. 115	M'Gillivray, James, Drumbreck, Kirkintilloch (Hen, Buff).
H	No. 111	Clark, Mrs. H. C., Station House, Cullen (Hen, White).
C	No. 112	Clark, Mrs. H. C., Station House, Cullen (Pullet, White).

CLASS 23. ORPINGTON—Black—Cock.

1st	No. 121	Fulton, John, Lauder Place, East Linton.
2nd	No. 123	Reid, David, Firthview, Portgordon.
3rd	No. 120	Chrystal, William, Inverboyndie, Banff.
V	No. 122	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.
C	No. 119	Black, William A. P., Croftfoot, Old Polmont.

CLASS 24. ORPINGTON—Black—Hen.

1st	No. 130	Reid, David, Firthview, Portgordon.
2nd	No. 129	Reid, David, Firthview, Portgordon.
3rd	No. 132	Sneddon, C., Wesham, Kirkham, Lancashire.
V	No. 128	Milliken Stock Nurseries, Johnstone, Renfrewshire.
C	No. 125	Brownlie, J. W., Garfield Poultry Yards, Newmains.
C	No. 126	Fulton, John, Lauder Place, East Linton.

CLASS 25. ORPINGTON—Black—Cockerel.

(No Entry.)

CLASS 26. ORPINGTON—Black—Pullet.

1st	No. 133	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.

CLASS 27. ORPINGTON—Buff—Cock.

1st	No. 134	Reid, David, Firthview, Portgordon.
2nd	No. 135	Reid, David, Firthview, Portgordon.

CLASS 28. ORPINGTON—Buff—Hen.

1st	No. 137	Reid, David, Firthview, Portgordon.
2nd	No. 136	Reid, David, Firthview, Portgordon.

CLASS 29. ORPINGTON—Buff—Cockerel.

1st	No. 139	Reid, David, Firthview, Portgordon.
2nd	No. 138	Reid, David, Firthview, Portgordon.

CLASS 30. ORPINGTON—Buff- Pullet.

1st	No. 140	Reid, David, Firthview, Portgordon.

CLASS 31. ORPINGTON—White— Cock.

1st	No. 141	Fulton, John, Lauder Place, East Linton.
2nd	No. 143	Thorburn & Steel, 34 High Street, Lockerbie.
V	No. 142	Morgan, William, Balcurvie, Windygates, Fife.

CLASS 32. ORPINGTON—White—Hen.

1st	No. 144	Fulton, John, Lauder Place, East Linton.

CLASS 33. ORPINGTON—White—Cockerel.

1st	No. 147	Weir, James, Brickhouse, New Abbey Road, Dumfries.

CLASS 34. ORPINGTON—White—Pullet.

(No Entry.)

CLASS 35. WYANDOTTE—Gold or Silver—Cock.

1st	No. 149	Morgan, William, Balcurvie, Windygates, Fife (Gold).
2nd	No. 148	M'Millan, Robert, Forty Acres Poultry Farm, Kilmarnock (Gold).

CLASS 36. WYANDOTTE—Gold or Silver—Hen.

1st	No. 150	Morgan, William, Balcurvie, Windygates, Fife (Gold).
2nd	No. 151	Petticrew, James, Springhill, Strone, Argyllshire (Gold).

CLASS 37. WYANDOTTE—Gold or Silver—Cockerel.

1st	No. 154	Morgan, William, Balcurvie, Windygates, Fife (Gold).
2nd	No. 156	Philipson, Mrs. J. M., Wyandotte Farm, Gilsland, Carlisle (Gold).
3rd	No. 155	Philipson, Mrs. J. M., Wyandotte Farm, Gilsland, Carlisle (Gold).
V	No. 153	Hamilton, Thomas, Kirkton Kilns, Bathgate (Gold).

CLASS 38. WYANDOTTE—Gold or Silver—Pullet.

1st	No. 161	Philipson, Mrs. J. M., Wyandotte Farm, Gilsland, Carlisle (Gold).
2nd	No. 160	Petticrew, James, Springhill, Strone, Argyllshire (Gold).
3rd	No. 162	Philipson, Mrs. J. M., Wyandotte Farm, Gilsland, Carlisle (Gold).
V	No. 158	Miller, Robert Scott, Clydeneuk Poultry Farm, Uddingston (Silver).
C	No. 157	Hamilton, Thomas, Kirkton Kilns. Bathgate (Gold).

CLASS 39. WYANDOTTE—White—Cock.

1st	No. 171	Weir, James, Brickhouse, New Abbey Road, Dumfries.
2nd	No. 164	Binnie, William, Garth House, Denny.
3rd	No. 168	Reid, David, Firthview, Portgordon.
V	No. 172	Weir, John, Midtown, New Abbey Road, Dumfries.
C	No. 167	Morgan, William, Balcurvie, Windygates, Fife.
C	No. 173	Williamson Brothers, East Lochran, Blairadam.

CLASS 40. WYANDOTTE—White—Hen.

1st	No. 182	Weir, James, Brickhouse, New Abbey Road, Dumfries.
2nd	No. 177	Reid, David, Firthview, Portgordon.
3rd	No. 178	Reid, David, Firthview, Portgordon.
V	No. 183	Weir, John, Midtown, New Abbey Road, Dumfries.
C	No. 175	Binnie, William, Garth House, Denny.
C	No. 184	Williamson Brothers, East Lochran, Blairadam.

CLASS 41. WYANDOTTE—White—Cockerel.

1st	No. 195	Weir, John, Midtown, New Abbey Road, Dumfries.
2nd	No. 186	Binnie, William, Garth House, Denny.
3rd	No. 190	Reid, David, Firthview, Portgordon.
V	No. 191	Reid, David, Firthview, Portgordon.
C	No. 194	Weir, James, Brickhouse, New Abbey Road, Dumfries.

CLASS 42. WYANDOTTE—White—Pullet.

1st	No. 199	Reid, David, Firthview, Portgordon.
2nd	No. 204	Weir, John, Midtown, New Abbey Road, Dumfries.
3rd	No. 203	Weir, James, Brickhouse, New Abbey Road, Dumfries.
V	No. 202	Templeton, George, Knowe Farm, Auchinleck.
C	No. 196	Binnie, William, Garth House, Denny.
C	No. 200	Reid, David, Firthview, Portgordon.

CLASS 43. WYANDOTTE—Partridge—Cock or Cockerel.

1st	No. 206	Millar, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling (Cock).

CLASS 44. WYANDOTTE—Partridge—Hen or Pullet.

1st	No. 207	Brown, Charles, Ivybank, Kintore (Hen).
2nd	No. 208	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling (Hen).

CLASS 45. WYANDOTTE—Any other Colour—Cock or Cockerel.

1st	No. 209	Cowe, John, Denhead of Gray, Dundee (Cock, Black).
2nd	No. 211	Reid, David, Firthview, Portgordon (Cock, Columbrian).
V	No. 210	Miller, Ian Campbell, Witches Craig Poultry Farm, Blair-Logie, Stirling (Cock, Columbrian).

CLASS 46. WYANDOTTE—Any other Colour—Hen or Pullet.

1st	No. 212	Cowe, John, Denhead of Gray, Dundee (Hen, Black).
2nd	No. 214	Miller, Thomas, 113 North Glencraig, Fife (Hen, Black).
V	No. 213	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling (Hen, Columbrian).

CLASS 47. RHODE ISLAND RED—Cock.

1st	No. 227	Reid, David, Firthview, Portgordon.
2nd	No. 225	Petrie, Alexander, Airth Station, Larbert.
3rd	No. 228	Reid, David, Firthview, Portgordon.
V	No. 223	Morgan, William, Balcurvie, Windygates, Fife.
H	No. 216	Brown, Charles, Ivybank, Kintore.
C	No. 220	M'Gillivray, James, Drumbreck, Kirkintilloch.

CLASS 48. RHODE ISLAND RED—Hen.

1st	No. 235	Brownlie, J. W., Garfield Poultry Yards, Newmains.
2nd	No. 243	Reid, David, Firthview, Portgordon.
3rd	No. 242	Petrie, Alexander, Airth Station, Larbert.
V	No. 240	Morgan, William, Balcurvie, Windygates, Fife.
H	No. 239	Meek, Robert, Whithorn, West Lothian.
C	No. 238	M'Millan, Robert, Forty Acres Poultry Farm, Kilmarnock.

CLASS 49. RHODE ISLAND RED—Cockerel.

1st	No. 256	Reid, David, Firthview, Portgordon.
2nd	No. 251	Cowe, John, Denhead of Gray, Dundee.
3rd	No. 257	Robertson, John, Craigend, Dundas Castle, South Queensferry.
V	No. 255	Reid, David, Firthview, Portgordon.
H	No. 254	Petrie, Alexander, Airth Station, Larbert.
C	No. 249	Bell, Dr. A. L., Ballochmyle House, Dunfermline.

CLASS 50. RHODE ISLAND RED—Pullet.

1st	No. 272	Robertson, John, Craigend, Dundas Castle, South Queensferry.
2nd	No. 269	Reid, David, Firthview, Portgordon.
3rd	No. 266	Petrie, Alexander, Airth Station, Larbert.
V	No. 268	Reid, David, Firthview, Portgordon.
H	No. 265	Moffat, W., Garwald, Eskdalemuir, Langholm.
C	No. 258	Bell, Dr. A. L., Ballochmyle House, Dunfermline.
C	No. 262	Cowe, John, Denhead of Gray, Dundee.

CLASS 51. SUSSEX—Light—Cock.

1st	No. 277	Fulton, John, Lauder Place, East Linton.
2nd	No. 279	Logan, James, Lauder Place, East Linton.
3rd	No. 282	Urquhart, Joseph, Skiddaw, Annan.
V	No. 278	Grant, Mrs. M. A., Westlands, Loose, Maidstone.
H	No. 280	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.

CLASS 52. SUSSEX—Light—Hen.

1st	No. 287	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.
2nd	No. 285	Fulton, John, Lauder Place, East Linton.
3rd	No. 286	Grant, Mrs. M. A., Westlands, Loose, Maidstone.
V	No. 290	Urquhart, Joseph, Skiddaw, Annan.
H	No. 288	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.

CLASS 53. SUSSEX—Light—Cockerel.

1st	No. 291	Fulton, John, Lauder Place, East Linton.
2nd	No. 293	Morgan, William, Balcurvie, Windygates, Fife.
3rd	No. 292	Grant, Mrs. M. A., Westlands, Loose, Maidstone.
V	No. 294	Sneddon, C., Wesham, Kirkham, Lancashire.

CLASS 54. SUSSEX—Light—Pullet.

1st	No. 297	Sneddon, C., Wesham, Kirkham, Lancashire.
2nd	No. 296	Grant, Mrs. M. A., Westlands, Loose, Maidstone.

CLASS 55. SUSSEX—Any other Variety—Cock.

1st	No. 298	Grant, Mrs. M. A., Westlands, Loose, Maidstone (Brown).
2nd	No. 300	Milliken Stock Nurseries, Johnstone, Renfrewshire (Speckled).
V	No. 299	Grant, Mrs. M. A., Westlands, Loose, Maidstone (Red).

CLASS 56. SUSSEX—Any other Variety—Hen.

1st	No. 301	Grant, Mrs. M. A., Westlands, Loose, Maidstone (Speckled).
2nd	No. 302	Grant, Mrs. M. A., Westlands, Loose, Maidstone (Red).
3rd	No. 303	Milliken Stock Nurseries, Johnstone, Renfrewshire (Speckled).
V	No. 304	Robb, William, Burnbrae Farm, Blackburn, West Lothian (Speckled).

CLASS 57. SUSSEX—Any other Variety—Cockerel.

1st	No. 305	Grant, Mrs. M. A., Westlands, Loose, Maidstone (Speckled).
2nd	No. 306	Grant, Mrs. M. A., Westlands, Loose, Maidstone (Red).
V	No. 307	Milliken Stock Nurseries, Johnstone, Renfrewshire (Speckled).

CLASS 58. SUSSEX—Any other Variety—Pullet.

1st	No. 309	Grant, Mrs. M. A., Westlands, Loose, Maidstone (Red).
2nd	No. 310	Milliken Stock Nurseries, Johnstone, Renfrewshire (Speckled).
3rd	No. 308	Grant, Mrs. M. A., Westlands, Loose, Maidstone (Brown).

CLASS 59. DORKING—Coloured—Cock.

1st	No. 312	Aitkenhead, Charles, Carr House Farm, New Seaham.
2nd	No. 315	Sneddon, C., Wesham, Kirkham, Lancashire.
3rd	No. 313	Rogers, James, Forneth, Blairgowrie.

CLASS 60. DORKING—Coloured—Hen.

1st	No. 319	Smythe, John Acheson, The Lodge, Coleraine, Ireland.
2nd	No. 316	Aitkenhead, Charles, Carr House Farm, New Seaham.
3rd	No. 318	Rogers, James, Forneth, Blairgowrie.
V	No. 317	Mechie, John, Grain Merchant, Auchtermuchty.

CLASS 61. DORKING—Coloured—Cockerel.

1st	No. 320	Aitkenhead, Charles, Carr House Farm, New Seaham.
2nd	No. 321	Major, A. J., Ditton, Langley, Buckinghamshire.

CLASS 62. DORKING—Coloured—Pullet.

1st	No. 324	Aitkenhead, Charles, Carr House Farm, New Seaham.
2nd	No. 325	Major, A. J., Ditton, Langley, Buckinghamshire.
3rd	No. 327	Sneddon, C., Wesham, Kirkham, Lancashire.

CLASS 63. DORKING—Silver Grey—Cock.

1st	No. 329	Andrew, James, Meadow View, Neilston.
2nd	No. 328	Aitkenhead, Charles, Carr House Farm, New Seaham.
3rd	No. 332	Robertson, David, Lomondside, Falkland, Fife.
C	No. 331	Mechie, John, Grain Merchant, Auchtermuchty.

CLASS 64. DORKING—Silver Grey—Hen.

1st	No. 333	Aitkenhead, Charles, Carr House Farm, New Seaham.
2nd	No. 335	Mechie, John, Grain Merchant, Auchtermuchty.
3rd	No. 337	Scott, Hugh, 1 Orangefield Place, Greenock.

CLASS 65. DORKING—Silver Grey—Cockerel.

1st	No. 342	Mechie, John, Grain Merchant, Auchtermuchty.
2nd	No. 341	Mechie, John, Grain Merchant, Auchtermuchty.
3rd	No. 340	Major, A. J., Ditton, Langley, Buckinghamshire.
V	No. 339	Duncan, George, Kilnhillock, Skene, Aberdeenshire.
H	No. 343	Welsh, John, Kingholm Quay, Dumfries.

CLASS 66. DORKING—Silver Grey—Pullet.

1st	No. 346	Mechie, John, Grain Merchant, Auchtermuchty.
2nd	No. 347	Mechie, John, Grain Merchant, Auchtermuchty.
3rd	No. 345	Major, A. J., Ditton, Langley, Buckinghamshire.
V	No. 348	Welsh, John, Kingholm Quay, Dumfries.

CLASS 67. SCOTS DUMPY—Cock.

1st	No. 350	Kerr, J. E., of Harviestoun, Dollar.
2nd	No. 352	Major, A. J., Ditton, Langley, Buckinghamshire.
3rd	No. 351	Kerr, J. E., of Harviestoun, Dollar.
V	No. 353	Major, A. J., Ditton, Langley, Buckinghamshire.
H	No. 349	Kerr, J. E., of Harviestoun, Dollar.

CLASS 68. SCOTS DUMPY—Hen.

1st	No. 354	Kerr, J. E., of Harviestoun, Dollar.
2nd	No. 357	Major Ditton, Langley, Buckinghamshire.
3rd	No. 358	Major, A. J., Ditton, Langley, Buckinghamshire
V	No. 355	Kerr, J. E., of Harviestoun, Dollar.
H	No. 356	Kerr, J. E., of Harviestoun, Dollar.

CLASS 69. SCOTS DUMPY—Cockerel.

1st	No. 361	Kerr, J. E., of Harviestoun, Dollar.
2nd	No. 360	Kerr, J. E., of Harviestoun, Dollar.
3rd	No. 362	Major, A. J., Ditton, Langley, Buckinghamshire.
H	No. 359	Brown, James W., Skellyton Farm, Larkhall.

CLASS 70. SCOTS DUMPY—Pullet.

1st	No. 364	Kerr, J. E., of Harviestoun, Dollar.
2nd	No. 363	Kerr, J. E., of Harviestoun, Dollar.
3rd	No. 365	Major, A. J., Ditton, Langley, Buckinghamshire.

CLASS 71. INDIAN GAME—Cock.

1st	No. 366	Fulton, John, Lauder Place, East Linton.
2nd	No. 367	Malcolm, Maurice, Boromeadow, Stirling.
3rd	No. 370	Sneddon, C., Wesham, Kirkham, Lancashire.

CLASS 72. INDIAN GAME—Hen.

1st	No. 374	Scott, Hugh, 1 Orangefield Place, Greenock.
2nd	No. 371	Malcolm, Maurice, Boromeadow, Stirling.
3rd	No. 375	Sneddon, C., Wesham, Kirkham, Lancashire.
V	No. 372	Malcolm, Maurice, Boromeadow, Stirling.

CLASS 73. INDIAN GAME—Cockerel.

1st	No. 377	Malcolm, Maurice, Boromeadow, Stirling.
2nd	No. 378	Miller, Robert Scott, Clydeneuk Poultry Farm, Uddingston.
3rd	No. 376	Goodall, George, Christleton, Chester.
V	No. 379	Sneddon, C., Wesham, Kirkham, Lancashire.

CLASS 74. INDIAN GAME—Pullet.

1st	No. 380	Dalgleish, James P., of Westgrange, East Grange Station, Dunfermline.
2nd	No. 384	Sneddon, C., Wesham, Kirkham, Lancashire.
3rd	No. 383	Miller, Robert Scott, Clydeneuk Poultry Farm, Uddingston.
V	No. 382	Malcolm, Maurice, Boromeadow, Stirling.

CLASS 75. GAME- Old English—Cock.

1st	No. 386	Hutt, John, Denend, Cardenden.
2nd	No. 389	Reed, William Graham, Low Cote Hill Farm, Carlisle.
3rd	No. 388	Nicholson, Charles, 10 William Street, Great Clifton, Workington.
V	No. 390	Smithson, Mrs., Black Lion Hotel, Ireby, Carlisle.
H	No. 387	Hutt, John, Denend, Cardenden.
C	No. 385	Hain, A., & Son, Lomond Road, Freuchie.
C	No. 391	Sneddon, C., Wesham, Kirkham, Lancashire.

CLASS 76. GAME—Old English—Hen.

1st	No. 396	Smithson, Mrs., Black Lion Hotel, Ireby, Carlisle.
2nd	No. 392	Hain, A., & Son, Lomond Road, Freuchie.
3rd	No. 394	Reed, William Graham, Low Cote Hill Farm, Carlisle.
V	No. 393	Hutt, John, Denend, Cardenden.
H	No. 395	Reed, William Graham, Low Cote Hill Farm, Carlisle.
C	No. 397	Sneddon, C., Wesham, Kirkham, Lancashire.

CLASS 77. GAME—Old English—Cockerel.

1st	No. 400	Smithson, Mrs., Black Lion Hotel, Ireby, Carlisle.
2nd	No. 399	Reed, William Graham, Lowe Cote Hill Farm, Carlisle.
3rd	No. 398	Crichton, D. & F., Foodieash, Cupar-Fife.
V	No. 401	Sneddon, C., Wesham, Kirkham, Lancashire.

CLASS 78. GAME—Old Engilsh—Pullet.

1st	No. 402	Crichton, D. & F., Foodieash, Cupar-Fife.
2nd	No. 404	Hutt, John, Denend, Cardenden.
3rd	No. 406	Smithson, Mrs., Black Lion Hotel, Ireby, Carlisle.
V	No. 405	Reed, William Graham, Low Cote Hill Farm, Carlisle.
H	No. 407	Sneddon C., Wesham, Kirkham, Lancashire.
C	No. 403	Hutt, John, Denend, Cardenden.

CLASS 79. BANTAM—Game—Cock.

1st	No. 410	Shepherd, Alexander, Lily Cottage, Forfar.
2nd	No. 411	Sneddon, C., Wesham, Kirkham, Lancashire.
3rd	No. 409	Ellwood, Joseph W., Papcastle, Cockermouth, Cumberland.
V	No. 408	Aird, David J. C., Mount Charles Poultry Yards, Kilmarnock

CLASS 80. BANTAM—Game—Hen.

1st	No. 415	Sneddon, C., Wesham, Kirkham, Lancashire.
2nd	No. 414	Shepherd, Alexander, Lily Cottage, Forfar.
3rd	No. 412	Aird, David J. C., Mount Charles Poultry Yards, Kilmarnock.
V	No. 413	Ellwood, Joseph W., Papcastle, Cockermouth, Cumberland

CLASS 81. BANTAM—Other than Game—Cock.

1st	No. 417	Binnie, William, Garth House, Denny (Wyandotte White)
2nd	No. 421	Laidler, James, Eastview, Paisley (Belgian Blue).
3rd	No. 416	Aird, David J. C., Mount Charles Poultry Yards, Kilmarnock (Pekin).
V	No. 420	Jenkins, Robert, Moatpark, Lightburn, Cambuslang (Rosecomb Black).
H	No. 422	Loggie, Allan, Cairnlea, Muirkirk (Rosecomb Black).
C	No. 418	Clark, George, 43 Anderson Street, Wishaw (Sebright Silver).

CLASS 82. BANTAM—Other than Game—Hen.

1st	No. 429	Laidler, James, Eastview, Paisley (Belgian Blue).
2nd	No. 428	Jenkins, Robert, Moatpark, Lightburn, Cambuslang (Rosecomb Black).
3rd	No. 427	Clark, George, 43 Anderson Street, Wishaw (Sebright Silver)
V	No. 425	Aird, David J. C., Mount Charles Poultry Yards, Kilmarnock (Wyandotte).
H	No. 426	Binnie, William, Garth House, Denny (Wyandotte White).
C	No. 430	Williamson Brothers, East Lochran, Blairadam (Wyandotte White).

CLASS 83. BANTAM—Any Variety—Cockerel.

1st	No. 434	Sneddon, C., Wesham, Kirkham, Lancashire (Game Modern)
2nd	No. 433	Shepherd, Alexander, Lily Cottage, Forfar (Game Modern)
3rd	No. 432	Delaney, James, Old Town, Gateside, Fife (Game Modern Pile).
V	No. 431	Aird, David J. C., Mount Charles Poultry Yards, Kilmarnock (Game).

CLASS 84. BANTAM—Any Variety—Pullet.

1st	No. 438	Shepherd, Alexander, Lily Cottage, Forfar (Game Modern).
2nd	No. 439	Sneddon, C., Wesham, Kirkham, Lancashire (Game Modern).
3rd	No. 435	Aird, David J. C., Mount Charles Poultry Yards, Kilmarnock (Game).
V	No. 437	Ellwood, Joseph W., Papcastle, Cockermouth, Cumberland (Game Old English).
H	No. 436	Delaney, James, Old Town, Gateside, Fife (Game Modern Pile).

CLASS 85. ANY OTHER RECOGNISED BREED—Cock.

1st	No. 448	Sneddon, C., Wesham, Kirkham, Lancashire (Modern Game).
2nd	No. 445	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling (Flower Bird).
3rd	No. 441	Fullarton, Thomas, Loans, Troon (Croad Langshan Black).
V	No. 447	Sinclair, Ian, Fern Cottage, Inverurie (Brahma White and Black Hackle).
H	No. 449	Thorburn & Steel, 34 High Street, Lockerbie (Cochin Buff).
C	No. 442	Jackson, R., Hallside House, Hallside, Lanarkshire (Cochin Partridge).
C	No. 443	M'Vicar, Daniel, Crosshill, Lennoxtown (Poland Golden).

CLASS 86. ANY OTHER RECOGNISED BREED—Hen.

1st	No. 459	Sinclair, Ian, Fern Cottage, Inverurie (Brahma White and Black Hackle).
2nd	No. 454	M'Vicar, Daniel, Crosshill, Lennoxtown (Poland Golden).
3rd	No. 456	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling (Light Brahma).
V	No. 457	Nelson Alexander, Craigness, Boglity Road, Kirkcaldy (Langshan Black).
H	No. 460	Sneddon, C., Wesham, Kirkham, Lancashire (Modern Game).
C	No. 455	M'Vicar, Daniel, Crosshill, Lennoxtown, (Poland Golden).

CLASS 87. ANY OTHER RECOGNISED BREED—Cockerel.

1st	No. 461	Fulton, H. J., Knollhead, Kettins, Coupar-Angus (Barnvelder Laced).
2nd	No. 462	Sinclair, Ian, Fern Cottage, Inverurie (Brahma White and Black Hackle).

CLASS 88. ANY OTHER RECOGNISED BREED—Pullet.

1st	No. 464	Jackson, R., Hallside House, Hallside, Lanarkshire (Cochin Partridge).

CLASS 89. CROSS-BRED FOWLS FOR LAYING PURPOSES.—Hen.

1st	No. 467	Fulton, John, Lauder Place, East Linton.
2nd	No. 469	Morgan, William, Balcurvie, Windygates, Fife.
3rd	No. 470	Ramsay, William, Muirhouse, Crosshouse.
V	No. 471	Whiteford, Mrs. R., Dyke Farm, Neilston.
H	No. 466	Black, William A. P., Croftfoot, Old Polmont.
C	No. 468	M'Howat, Matthew, Muckcroft, Lennoxtown.

CLASS 90.—CROSS-BRED FOWLS FOR LAYING PURPOSES—Pullet.

1st	No. 472	Binnie, William, Garth House, Denny.
2nd	No. 474	Ramsay, William, Muirhouse, Crosshouse.
3rd	No. 473	Morgan, William, Balcurvie, Windygates, Fife.
V	No. 475	Wilkie, John, Orr Bridge Poultry Farm, Dysart.

CLASS 91. DUCKS—Aylesbury—Drake.

1st	No. 477	Kirkwood, Robert A , Camelon Hotel, Falkirk.
2nd	No. 476	Dalgleish, James P., of West Grange, East Grange Station, Dunfermline.
V	No. 478	Wheatley, John Yates, Appleton Roebuck, York.

CLASS 92. DUCKS—Aylesbury—Duck.

1st	No. 479	Dalgleish, James P., of West Grange, East Grange Station, Dunfermline.
2nd	No. 480	Kirkwood, Robert A., Camelon Hotel, Falkirk.
V	No. 481	Wheatley, John Yates, Appleton Roebuck, York.

CLASS 93. DUCKS—Aylesbury—Drake (Young).

1st	No. 484	Wheatley, John Yates, Appleton Roebuck, York.
2nd	No. 483	Kirkwood, Robert A., Camelon Hotel, Falkirk.
V	No. 482	Dalgleish, James P., of West Grange, East Grange Station, Dunfermline.

CLASS 94. DUCKS—Aylesbury—Duck (Young).

1st	No. 487	Wheatley, John Yates, Appleton Roebuck, York.
2nd	No. 485	Dalgleish, James P., West Grange, East Grange Station, Dunfermline.
V	No. 486	Kirkwood, Robert A., Camelon Hotel, Falkirk.

CLASS 95. DUCKS—Orpington—Drake.

1st No. 490 Kirkwood, Robert A., Camelon Hotel, Falkirk.
2nd No. 489 Dalgleish, James P., of West Grange, East Grange Station, Dunfermline.
3rd No. 488 Clement, John, Westview, Stranraer.

CLASS 96. DUCKS—Orpington—Duck.

1st No. 493 Kirkwood, Robert A., Camelon Hotel, Falkirk.

CLASS 97. DUCKS—Orpington—Drake (Young).

1st No. 496 Kirkwood, Robert A., Camelon Hotel, Falkirk.

CLASS 98. DUCKS—Orpington—Duck (Young).

1st No. 497 Kirkwood, Robert A., Camelon Hotel, Falkirk.

CLASS 99. DUCKS—Indian Runner—Drake.

1st No. 498 Dalgleish, James P., of West Grange, East Grange Station, Dunfermline.
2nd No. 505 Young, John, Station House, Dirleton.
3rd No. 503 Smith, Matthew, Netherholm House, Dumfries.
V No. 500 Kirkwood, Robert A., Camelon Hotel, Falkirk.
H No. 501 Lang, E. H., Craig Bittern, Dalbeattie.
C No. 504 Smith, Matthew, Netherholm House, Dumfries.

CLASS 100. DUCKS—Indian Runner—Duck.

1st No. 507 Dalgleish, James P., of West Grange, East Grange Station, Dunfermline.
2nd No. 512 Smith, Matthew, Netherholm House, Dumfries.
3rd No. 510 Lang, E. H., Craig Bittern, Dalbeattie.
V No. 513 Smith, Matthew, Netherholm House, Dumfries.
H No. 514 Young, John, Station House, Dirleton.
C No. 515 Young, John, Station House, Dirleton.

CLASS 101. DUCKS—Any other Variety—Drake.

1st No. 517 Kirkwood, Robert A., Camelon Hotel, Falkirk (Rouen White).
2nd No. 518 Shaw, D., & Son, Waterfoot, Busby (Rouen).
3rd No. 516 Hamilton of Dalzell, Lady, Dalzell Home Farm, Motherwell (Khaki Campbell Brown).

CLASS 102. DUCKS—Any other Variety—Duck.

1st No. 520 Dalgleish, James P., of West Grange, East Grange Station, Dunfermline (Rouen Brown).
2nd No. 522 Kirkwood, Robert A., Camelon Hotel, Falkirk (Rouen White).
3rd No. 524 Shaw, D., & Son, Waterfoot, Busby (Rouen).
V No. 523 Shaw, D., & Son, Waterfoot, Busby (Rouen).
H No. 521 Hamilton of Dalzell, Lady, Dalzell Home Farm, Motherwell (Khaki Campbell Brown).

CLASS 103. GEESE—Gander.

1st No. 528 Wheatley, John Yates, Appleton Roebuck, York.
2nd No. 527 Shewan, Alexander, South Percyhorner, Fraserburgh.
V No. 526 Hays, Miss Mary W. S., Crosby Lodge, Crosby-on-Eden, Carlisle.

CLASS 104. GEESE—Goose.

1st	No. 532	Wheatley, John Yates, Appleton Roebuck, York.
2nd	No. 531	Shewan, Alexander, South Percyhorner, Fraserburgh.
3rd	No. 530	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.
V	No. 529	Hays, Miss Mary W. S., Crosby Lodge, Crosby-on-Eden, Carlisle.

CLASS 105. TURKEYS—Cock.

1st	No. 538	Shewan, Alexander, South Percyhorner, Fraserburgh.
2nd	No. 535	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.
3rd	No. 534	Maitland, Brig.-Gen. James Dalgleish Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol.
V	No. 533	Hamilton, Thomas, Kirkton Kilns, Bathgate.

CLASS 106. TURKEYS—Hen.

1st	No. 545	Shewan, Alexander, South Percyhorner, Fraserburgh.
2nd	No. 543	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.
3rd	No. 546	Snodgrass, Miss Joanna G., Millig's Farm, Helensburgh.
V	No. 542	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.
H	No. 541	Maitland, Brig.-Gen. James Dalgleish Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol.
C	No. 540	Hamilton, Thomas, Kirkton Kilns, Bathgate.

TABLE POULTRY.

CLASS 107. TABLE FOWLS—Any Pure Breed—Pair of Cockerels.

1st	No. 549	Fulton, John, Lauder Place, East Linton (Sussex Light).
2nd	No. 552	Reid, David, Firthview, Portgordon (Rhode Island Red).
3rd	No. 550	Mechie, John, Grain Merchant, Auchtermuchty (Dorking Silver Grey).
V	No. 548	Fulton, H. J., Knollhead, Kettins, Coupar-Angus (Sussex Light).
H	No. 547	Black, William A. P., Croftfoot, Old Polmont (Indian Game).

CLASS 108. TABLE FOWLS—Any Pure Breed—Pair of Pullets.

1st	No. 557	Reid, David, Firthview, Portgordon (Rhode Island Red).
2nd	No. 556	Mechie, John, Grain Merchant, Auchtermuchty (Dorking Silver Grey).
3rd	No. 555	Fulton, John, Lauder Place, East Linton (Sussex Light).
V	No. 553	Black, William A. P., Croftfoot, Old Polmont (Orpington Buff).
H	No. 558	Rogers, James, Forneth, Blairgowrie (Dorking Dark).

CLASS 109. TABLE FOWLS—Game-Cross—Pair of Cockerels.

1st	No. 559	Black, William A. P., Croftfoot, Old Polmont (Sussex-Indian Game).
2nd	No. 562	Sinclair, Ian, Fern Cottage, Inverurie (Game Rhode Island Red).
3rd	No. 561	Sinclair, Ian, Fern Cottage, Inverurie (Game Rhode Island Red).
V	No. 560	Laidler, James, Eastview, Paisley (Game Wyandotte).

CLASS 110. TABLE FOWLS—Game-Cross—Pair of Pullets.

1st	No. 565	Sinclair, Ian, Fern Cottage, Inverurie (Game Rhode Island Red).
2nd	No. 563	Black, William A. P., Croftfoot, Old Polmont (Sussex-Indian Game).
V	No. 564	Laidler, James, Eastview, Paisley (Game Wyandotte).

CLASS 111. TABLE FOWLS—Any other Cross—Pair of Cockerels.

1st	No. 568	Wilkie, John, Orr Bridge Poultry Farm, Dysart (Wyandotte White and Sussex).
2nd	No. 567	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.
V	No. 566	Black, William, A. P., Croftfoot, Old Polmont (Sussex, Buff Orpington.

CLASS 112. TABLE FOWLS—Any other Cross—Pair of Pullets.

1st	No. 571	Wilkie, John, Orr Bridge Poultry Farm, Dysart (Wyandotte White and Sussex).
2nd	No. 570	Miller, Ian Campbell, Witches Craig Poultry Farm, Blairlogie, Stirling.
V	No. 569	Black, William A. P., Croftfoot, Old Polmont, (Sussex, Buff Orpington).

CLASS 113. DUCKLINGS for Table Purposes—Any Breed or Cross—Pair of Ducklings.

1st	No. 575	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline (Aylesbury White).
2nd	No. 577	Wheatley, John Yates, Appleton Roebuck, York (Aylesbury).
3rd	No. 574	Dalgleish, James P., of West Grange, East Grange Station, Dunfermline (Aylesbury White).
V	No. 572	Black, William A. P., Croftfoot, Old Polmont (Aylesbury).
H	No. 573	Black, William A. P., Croftfoot, Old Polmont (Pekin).

FUR-PRODUCING RABBITS.

First Premium—*Fifteen Shillings.* Second Premium—*Ten Shillings.* Where there are Four or more Entries, Third Premium—*Five Shillings.*

CLASS 1. BLUE BEVEREN—Buck.

1st	No. 10	Scott & Philp, Lochleven Rabbitry, Kinross.
2nd	No. 5	Heiton, Mrs. K. Granger, Darnick, Kinnoull, Perth.
3rd	No. 4	Cree, James S., Dunibert, Balfron.
V	No. 7	Maxwell, Miss U. C., and the Master of Lovat, Fairlie House, Beauly.
H	No. 3	Coutts, David, 70 Cairnie Street, Arbroath.

CLASS 2. BLUE BEVEREN—Doe.

1st	No. 14	Heiton, Mrs. K. Granger, Darnick, Kinnoull, Perth
2nd	No. 16	Montgomery, Miss Graham, Cairnleith, Crieff.
3rd	No. 19	Robertson, Mrs., Middlehill, Blackford.
V	No. 18	Robertson, Mrs., Middlehill, Blackford.
H	No. 21	Strachan, G. R., St. Helen's, Tollcross, Glasgow.
C	No. 20	Scott & Philp, Lochleven Rabbitry, Kinross.

CLASS 3. BLUE BEVEREN—Buck or Doe, under Five Months at first day of Show.

1st	No. 31	Robertson, Mrs., Middlehill, Blackford.
2nd	No. 32	Scott & Philp, Lochleven Rabbitry, Kinross.
3rd	No. 36	Strachan, G. R., St. Helen's, Tollcross, Glasgow.
V	No. 33	Scott & Philp, Lochleven Rabbitry, Kinross.
H	No. 37	Strachan, G. R., St. Helen's, Tollcross, Glasgow.
C	No. 29	Miller, Alexander R., Dubbs, Stevenston, Ayrshire

CLASS 4. CHINCHILLA—Buck.

1st	No. 56	Montgomery, C., 217 Langlands Road, Govan.
2nd	No. 61	Paton, Master Jack, Gowrie Farm, Stanley.
3rd	No. 43	Graham, Mrs. E. Balfour, Levenbank, Leven.
V	No. 57	Montgomery, Miss Graham, Cairnleith, Crieff.
H	No. 65	Russell-Ferguson, Mrs. H., Ardtur, Appin.
C	No. 40	Chesshire, Mrs. E. M., Shenstone Lodge, Lichfield, Staffs.

CLASS 5. CHINCHILLA—Doe.

1st	No. 79	Logie, David, "Avondale," Riddell Street, Clydebank.
2nd	No. 71	Chesshire, Mrs. E. M., Shenstone Lodge, Lichfield, Staffs.
3rd	No. 77	Johnstone, William, Mossland Cottage, Renfrew.
V	No. 83	Montgomery, Miss Graham, Cairnleith, Crieff.
H	No. 73	Edwards, Mrs. E. I. Lloyd, Trevor Hall, Trevor, Wrexham.
C	No. 80	Lowrey, John, 6 Mill Wynd, Perth.

CLASS 6. CHINCHILLA—Buck or Doe, under Five Months at first day of Show.

1st	No. 96	Chapman, Alexander S., North Arkleston Farm, Paisley.
2nd	No. 123	Morton, J. M. & H., Auldbreck, Whithorn.
3rd	No. 91	Beaton, James, Hallroom, Guildtown, Perth.
V	No. 113	Lowrey, John, 6 Mill Wynd, Perth.
H	No. 98	Cree, James S., Dunibert, Balfron.
C	No. 97	Chesshire, Mrs. E. M., Shenstone Lodge, Lichfield, Staffs.
C	No. 99	Cree, James S., Dunibert, Balfron.
C	No. 117	Macmillan, Miss E. W. T., Woodlea, Moniaive.
C	No. 124	Nelson, R., 7 Golden Hill, Leyland.

CLASS 7. HAVANA—Buck or Doe.

1st	No. 140	Lancaster, H. W., School House Terrace, Alston, Cumberland.
2nd	No. 142	Montgomery, Miss Graham, Cairnleith, Crieff.
3rd	No. 146	Scott & Philp, Lochleven Rabbitry, Kinross.
V	No. 139	Heiton, Miss J., Darnick, Kinnoull, Perth.

CLASS 8. LILAC—Buck or Doe.

1st	No. 160	Smith, C. L., 25 Monks Road, Winchester.
2nd	No. 156	Montgomery, Miss Graham, Cairnleith, Crieff.
3rd	No. 158	Nelson, R., 7 Golden Hill, Leyland.
V	No. 150	Chesshire, Mrs. E. M., Shenstone Lodge, Lichfield, Staffs.
H	No. 157	Nelson, R., 7 Golden Hill, Leyland.

CLASS 9. ANGORA—Buck or Doe.

2nd	No. 163	Chapman, Alexander S., North Arkleston Farm, Paisley.

CLASS 10. Any other Variety of FUR-PRODUCING RABBIT—Buck or Doe.

1st	No. 177	Thomson, Alexander, Burndale, Kilmacolm (Blue-eyed White Beveren).
2nd	No. 171	Blake, William, 35 Wakefield Road, Lightcliffe, Halifax, Yorks (Argent Creme Continental).
3rd	No. 178	Thomson, Alexander, Burndale, Kilmacolm (Blue-eyed White Beveren).
V	No. 176	Mathison, James, Cupar Road, Kingskettle (Black Tan).
H	No. 174	M'Inroy, John, Gairney Bank, Kinross (Silver Grey).

HONEY, &c.

Should there be in any class three or less than three entries, the value of the first prize will be reduced to that of the second, the second to that of the third, and no third prize will be awarded.

OPEN CLASSES.

The Silver and Bronze Medals will be awarded by the Scottish Bee-keepers' Association *to the First and Second winners of the greatest number of points in Honey Classes, calculated on the following basis: First Prize, 3 points; Second Prize, 2 points; Third Prize, 1 point.*

1st—Brown, Thomas C., Helenslea, St. Ninians, Stirling (25 points).
2nd—Cochran, James, 18 Dundonald Road, Kilmarnock (8 points).

CLASS 1. Six Sections of COMB HONEY, excluding Heather Honey.—Premiums, 20s, 15s, 10s.

1st	No. 1	Brown, Thomas C., Helenslea, St. Ninians, Stirling.
2nd	No. 9	Pullar, David, Dura Gardens, Cupar-Fife.
3rd	No. 5	Hutton, Miss A. M., Gibliston, Kilconquhar.
V	No. 3	Elliot, Matthew, 45 Culduthel Road, Inverness.
H	No. 4	Fernie, William, Westfield Avenue, Cupar-Fife.
C	No. 11	Rollo, D. M., Brackland, Cupar-Fife.

CLASS 2. Six Sections of HEATHER HONEY.—Premiums, 20s, 15s, 10s.
(No entries.)

CLASS 3. Six Jars of RUN or EXTRACTED LIGHT-COLOURED HONEY; approximate weight, 6 lb.—Premiums, 20s, 15s, 10s.

1st	No. 14	Brown, Thomas C., Helenslea, St. Ninians, Stirling.
2nd	No. 17	Pullar, David, Dura Gardens, Cupar-Fife.
V	No. 16	Hutton, Miss A. M., Gibliston, Kilconquhar.

CLASS 4. Six Jars of RUN or EXTRACTED MEDIUM or DARK-COLOURED HONEY, excluding Heather Honey; approximate weight, 6 lb.—Premiums, 20s, 15s, 10s.

1st	No. 21	Brown, Thomas C., Helenslea, St. Ninians, Stirling.
2nd	No. 22	Cochran, James, 18 Dundonald Road, Kilmarnock.
3rd	No. 20	Bowers, E., Gardner Road, Christchurch, Hants.
V	No. 26	Pullar, David, Dura Gardens, Cupar-Fife.

CLASS 5. Six Jars of PRESSED HEATHER HONEY in liquid form; approximate weight, 6 lb.—Premiums, 20s, 15s, 10s.

1st	No. 29	Duncan, Miss A. L. Bryce, Newlands, Dumfries.
2nd	No. 28	Brown, Thomas C., Helenslea, St. Ninians, Stirling.
3rd	No. 31	Scott, George, Waterton, Old Cumnock.

CLASS 6. Six Jars of GRANULATED HONEY; approximate weight, 6 lb.—Premiums, 20s, 15s, 10s.

1st	No. 32	Brown, Thomas C., Helenslea, St. Ninians, Stirling.
2nd	No. 36	Harper, Robert, 36 Land Street, Keith.
3rd	No. 34	Fernie, William, Westfield Avenue, Cupar-Fife.

CLASS 7. Two Shallow Frames of COMB HONEY for extracting purposes.—Premiums, 20s, 15s, 10s.

2nd	No. 41	Elliot, Matthew, 45 Culduthel Road, Inverness.

CLASS 8. PRODUCTS made with the aid of Honey.—Premiums, 20s, 15s, 10s.

2nd	No. 43	Brown, Thomas C., Helenslea, St. Ninians, Stirling.
V	No. 44	Cunningham, John, 51 George Street, Bonhill, Dumbartonshire.

CLASS 9. Best display of HONEY in any form, staged in space 3 feet by 3 feet, height from table not exceeding 4 feet. Weight of Honey not to exceed 100 lb.—Premiums, 60s, 30s, 20s.

1st	No. 45	Brown, Thomas C., Helenslea, St. Ninians, Stirling.

CLASS 10. Best Display of HONEY, in any form, staged in space 3 feet by 3 feet, height from table not exceeding 4 feet. Weight of Honey not to exceed 40 lb.—Premiums, 60s, 30s, 20s.

2nd	No. 46	Brown, Thomas C., Helenslea, St. Ninians, Stirling.

CLASS 11. Best exhibit of not less than 1 lb. of WAX, in any form.—Premiums, 20s, 15s, 10s.

1st	No. 49	Cunningham, John, 51 George Street, Bonhill, Dumbartonshire.
2nd	No. 47	Brown, Thomas C., Helenslea, St. Ninians, Stirling.
3rd	No. 43	Cochran, James, 18 Dundonald Road, Kilmarnock.
H	No. 52	Pullar, David, Dura Gardens, Cupar-Fife.

CLASS 12. Best exhibit of not less than 1 lb. of WAX, made into shapes for retail trade and over-counter trade. Convenience in packing to be taken into consideration.—Premiums, 20s, 15s, 10s.

1st	No. 61	Pullar, David, Dura Gardens, Cupar-Fife.
2nd	No. 53	Brown, Thomas C., Helenslea, St. Ninians, Stirling.
3rd	No. 60	MacCallum, H. Malcolm, Lynton, Mearns Road, Clarkston.

CLASS 13. OBSERVATORY HIVE, with Queen and Bees.—Premiums, 50s, 30s, 15s.

1st	No. 64	Hunt, J., 6 Waterloo Street, Glasgow.
2nd	No. 63	Fernie, William, Westfield Avenue, Cupar-Fife.

CONFINED TO SCOTTISH EXHIBITORS.

CLASS 14. One Shallow Frame of COMB HONEY for extracting purposes.—Premiums, 20s, 15s, 10s.

1st	No. 72	Thoms, John, Rosslyn Cottage, Coupar-Angus.
2nd	No. 67	Brown, Thomas C., Helenslea, St. Ninians, Stirling.
3rd	No. 68	Elliot, Matthew, 45 Culduthel Road, Inverness.

CLASS 15. Six Sections of COMB HONEY, excluding Heather Honey.—Premiums, 20s, 15s, 10s.

1st	No. 82	Rollo, D. M., Brackland, Cupar-Fife.
2nd	No. 84	Thoms, John, Rosslyn Cottage, Coupar-Angus.
3rd	No. 75	Fernie, William, Westfield Avenue, Cupar-Fife.
V	No. 85	Brown, Thomas C., Helenslea, St. Ninians, Stirling.
H	No. 74	Elliot, Matthew, 45 Culduthel Road, Inverness.
C	No. 76	Hutton, Miss A. M., Gibliston, Kilconquhar.
C	No. 79	M'Naughton, Joseph, 44 Dumbarton Road, Stirling.

CLASS 16. Six Sections of HEATHER HONEY.—Premiums, 30s, 20s, 10s.

1st	No. 86	M'Naughton, Joseph, 44 Dumbarton Road, Stirling.

CLASS 17. Six Jars of RUN or EXTRACTED MEDIUM or DARK-COLOURED HONEY, excluding Heather Honey; approximate weight, 6 lb.—Premiums, 30s, 20s, 10s.

1st	No. 88	Cochran, James, 18 Dundonald Road, Kilmarnock.
2nd	No. 87	Brown, Thomas C., Helenslea, St. Ninians, Stirling.
3rd	No. 93	Pullar, David, Dura Gardens, Cupar-Fife.

CLASS 18. Six Jars of RUN or EXTRACTED LIGHT-COLOURED HONEY; approximate weight, 6 lb.—Premiums, 30s, 20s, 10s.

1st	No. 97	Cochran, James, 18 Dundonald Road, Kilmarnock.
2nd	No. 100	Pullar, David, Dura Gardens, Cupar-Fife.
3rd	No. 98	Hutton, Miss A. M., Gibliston, Kilconquhar.

DAIRY PRODUCE.

CLASS 1. POWDERED BUTTER, not less than 3 lb.—Premiums, £4, £2, and £1.

1st	No. 9	Monteith, Mrs., The Island, Bothkennar, Falkirk.
2nd	No. 1	Fleming, Andrew, Threepland, Eaglesham.
3rd	No. 11	Rennie, Miss, Parkhead, Slamannan.
V	No. 3	Holms, Mrs., Faulds, Gourock.
H	No. 13	Shanks, Miss, Broomhill, Denny.
C	No. 10	Ramage, Mrs. James, Lathallan Road, Polmont.
C	No. 15	Steel, David, Lodge Farm, Slamannan.
C	No. 16	Stratton, Isa A., Meadowmore, Methven.

CLASS 2. FRESH BUTTER, Three 1 lb. Rolls.—Premiums, £4, £2, and £1.

1st	No. 30	Rennie, Miss, Parkhead, Slamannan.
2nd	No. 20	Fleming, Andrew, Threepland, Eaglesham.
3rd	No. 18	Barclay, Mrs. George, Hartfield Farm, Paisley.
V	No. 28	Monteith, Mrs., The Island, Bothkennar, Falkirk.
H	No. 32	Shanks, Miss, Broomhill, Denny.
C	No. 35	Stratton, Isa A., Meadowmore, Methven.
C	No. 34	Steel, David, Lodge Farm, Slamannan.
C	No. 37	Thomson, W. J., Craigbrock, Blanefield.

CLASS 3. CHEDDAR CHEESE, 56 lb. and upwards.—Premiums, £6, £4, £2, and £1.

1st	No. 44	Dean, William, Cairniehill Dairy, Borgue, Kirkcudbright.
2nd	No. 53	M'Adam, James, Craigley, Castle-Douglas.
3rd	No. 56	M'Connell, William, Shankston, Patna.
4th	No. 64	Shedden, William, Balgerran, Castle-Douglas.
V	No. 42	Cruickshanks, William, Kirkeoch, Kirkcudbright.
H	No. 47	Henry, Arthur A., East Galdenoch, Stoneykirk.
C	No. 59	M'Dowall, George, South Boreland, Dunragit.
C	No. 63	Ramsay, J. & W., Airdrie, Kirkbean, Dumfries.
C	No. 54	MacCaig, I. and A. W., Kirkland, Stranraer.

CLASS 4. SWEET MILK CHEESE, flat shape, white in colour, from a dairy where all cheese is made according to the Dunlop method.—Premiums, £4, £2, and £1.

1st	No. 69	Milby, Joseph, Underlaw, Darvel.

CLASS 5. CHEESE, 14 lb. and under.—Premiums, £3, £2, and £1.

1st	No. 80	M'Adam, James, Craigley, Castle-Douglas.
2nd	No. 73	Dean, William, Cairnehill Dairy, Borgue, Kirkcudbright.
3rd	No. 82	M'Connell, William, Shankston, Patna.
V	No. 89	Shedden, William, Balgerran, Castle-Douglas.
H	No. 71	Cruickshanks, William, Kirkeoch, Kirkcudbright.
C	No. 84	M'Dowall, George, South Boreland, Dunragit.
C	No. 70	Cross, Thomas, Knockdon, Maybole.
C	No. 83	M'Donald, Thomas, Barn Kirk, Newton-Stewart.

WOOL.

PURE BREED CLASSES.

CLASS 1. BLACKFACE WOOL—EWE. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 1	Barbour, William, Strathdee, Kirkcudbright.
2nd	No. 13	Novar Estates, Limited, Novar, Evanton, Ross-shire.
3rd	No. 9	Lees, William, Mid Lix, Killin.
V	No. 16	Young, Arthur, Garroch House, Dalry, Kirkcudbrightshire.
C	No. 8	Lees, William, Mid Lix, Killin.

CLASS 2. BLACKFACE WOOL—WEDDER. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 22	Lees, William, Mid Lix, Killin.
2nd	No. 18	Barbour, William, Strathdee, Kirkcudbright.
3rd	No. 17	Barbour, William, Strathdee, Kirkcudbright.

CLASS 3. BLACKFACE WOOL—HOGG. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 31	Lees, William, Mid Lix, Killin.
2nd	No. 29	Grant, D. S., Broughdarg, Glenshee, Blairgowrie.
3rd	No. 33	Macmillan, Messrs, Glencrosh, Moniaive.

CLASS 4. CHEVIOT WOOL—EWE. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 42	Miller, James Skelfhill, Hawick.
2nd	No. 43	Oliver, Thomas, Greenbanks, Roberton, Hawick.
3rd	No. 44	Oliver, Thomas, Greenbanks, Roberton, Hawick.
V	No. 41	Elliot, Robert T., Chatto, Kelso.

CLASS 5. CHEVIOT WOOL—HOGG. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 47	Elliot, Robert T., Chatto, Kelso.
2nd	No. 48	Miller, James, Skelfhill, Hawick.
3rd	No. 49	Oliver, Thomas, Greenbanks, Roberton, Hawick.

CLASS 6. BORDER LEICESTER WOOL—EWE. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 52	Melrose, A. J., Heavyside, Biggar.
2nd	No. 54	Templeton, Thomas & Matthew, Sandyknowe, Kelso.
3rd	No. 55	Templeton, Thomas & Matthew, Sandyknowe, Kelso.

CLASS 7. BORDER LEICESTER WOOL—HOGG. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 57	Murray, R. G., & Son, Spittal, Biggar.
2nd	No. 59	Templeton, Thomas & Matthew, Sandyknowe, Kelso.
3rd	No. 58	Templeton, Thomas & Matthew, Sandyknowe, Kelso.

CLASS 8. HALF-BRED WOOL—EWE. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 61	Brown, John C., Hundalee, Jedburgh.
2nd	No. 63	Oliver, Thomas, Greenbanks, Roberton, Hawick.
3rd	No. 60	Bouglas, William, Hills View, Jedburgh.

CLASS 9. HALF-BRED WOOL—HOGG. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 66	Brown, John C., Hundalee, Jedburgh.
2nd	No. 68	Templeton, Thomas and Matthew, Sandyknowe, Kelso.
3rd	No. 67	Oliver, Thomas, Greenbanks, Roberton, Hawick.
V	No. 65	Bouglas, William, Hills View, Jedburgh.

CLASS 10. SHETLAND WOOL.—EWE. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 69	Campbell, Mrs. M. E., Dolphinton House, Dolphinton.
2nd	No. 71	Campbell, Mrs. M. E., Dolphinton House, Dolphinton.
3rd	No. 70	Campbell, Mrs. M. E., Dolphinton House, Dolphinton.

CLASS 11. SHETLAND WOOL—HOGG. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 75	Campbell, Mrs. M. E., Dolphinton House, Dolphinton.
2nd	No. 77	Campbell, Mrs. M. E., Dolphinton House, Dolphinton.
3rd	No. 76	Campbell, Mrs. M. E., Dolphinton House, Dolphinton.

RURAL INDUSTRIES SECTION.

OPEN CLASSES.

SHETLAND KNITTING.

CLASS 1. FINE LACE GOODS.—Premiums, £3, £2, and £1.

1st No. 15 Williamson, Miss H. M., Everland, Fetlar, Shetland (Shawl).
2nd No. 3 Jamieson, Miss Margaret, Gerriegarth, Baltasound, Lerwick (Shawl).
3rd No. 5 Johnston, Miss Carrie, Seaview, Baltasound, Lerwick (Jumper).

CLASS 2. JUMPER, SPORTS COAT, or DRESS—one or more Colours.—Premiums, £3, £2, and £1.

1st No. 33 Jamieson, Miss Maggie C., Maywick, Bigton, Shetland (Jumper).
2nd No 32 Jamieson, Miss Joey, Gord, Levenwick, Shetland (Jumper).
3rd No. 49 Williamson, Mrs. M., Everland, Fetlar, Shetland (Dress).
C No. 38 Leslie, Miss Joan M., North House, Virkie, Shetland (Jumper).
C No. 44 Nicolson, Mrs. R. M., Burravoe, South Yell, Shetland (Jumper).

CLASS 3. JUMPER or SPORTS COAT—all over Fair Isle.—Premiums, £3, £2, and £1.

1st No. 51 Anderson, Miss J. C., Easterleigh, Burravoe, Lerwick (Jumper).
2nd No. 75 Priest, Miss A. J., Roadside, Norwick, Haroldswick, Shetland (Jumper).
3rd No. 58 Goudie, Miss Jessie A., Scousburgh, Lerwick (Jumper).
C No. 63 Johnson, Miss Mary J., Vatster, Bigton, Shetland (Sports Coat).
C No. 73 Nicolson, Mrs. R. M., Burravoe, South Yell, Shetland (Jumper).

CLASS 4. OTHER EXHIBITS.—Premiums, £2, £1, and 10s.

1st No. 94 Williamson, Miss A. M., Everland, Fetlar, Shetland (Gent's Waistcoat).
2nd No. 86 Jamieson, Miss Helen S., Gerriegarth, Baltasound, Lerwick (Shawl).
3rd No. 93 Thomson, Miss M., Norwick, Haroldswick, Shetland (Gloves).

TWEEDS.

CLASS 5. HARRIS or OTHER TWEEDS—Hand-spun, Hand-woven, and Vegetable-dyed.—Premiums, £3, £2, and £1.

1st No. 100 Murray, Miss Margaret, Tressidy Hill, Lairg, Sutherlandshire.
C No. 95 MacGregor, R., 57 Haugh Road, Inverness.

CLASS 6. TWEED—Mill-spun, Hand-woven.—Premiums, £3, £2, and £1.

1st No. 107 MacGregor, R., 57 Haugh Road, Inverness.
2nd No 103 M'Donald, Miss Margaret, Rheanbreck, Lairg, Sutherlandshire.

MISCELLANEOUS.

CLASS 7. HOME-MADE RUG (WOOL).—Premiums, £3, £2, and £1.

1st	No. 122	Macmaster, Mrs. Hugh, S. Milmain, Stoneykirk, Stranraer.
2nd	No. 119	Harvie, Miss N. H., Gavinbank Cottage, Blackwood, Lanarkshire.
3rd	No. 115	Campbell, Alastair M., of Auchendarroch, Ardrishaig, Argyll.
V	No. 112	Bisset, Mrs. K., Borlum, Fort Augustus.

CLASS 8. EMBROIDERY—White.—Premiums, £3, £2, and £1.

1st	No. 162	Stewart, Miss A. A., Lochhill, Ringford, Kirkcudbrightshire (Pillow Case).
2nd	No. 163	Sutherland, Mrs. E., Schoolhouse, Keiss, Wick (Table Centre).
3rd	No. 139	Dunning, Miss E. D. H., Las Arenas, Dean Street, Clydebank (Toilet Mats).
V	No. 135	Drennan, Miss A. A., Carse Hall, Limavady, Co. Derry (Tray Cloth).
H	No. 154	Moon, Miss Gladys, Ballyderitt, Aghadowey, Co. Londonderry (Tray Cloth).
C	No. 146	Keay, Mrs., Bangour, West Lothian (Bed Cover).
C	No. 137	Drennan, Miss Mary I., Carse Hall, Limavady, Co. Derry (Table Centre).
C	No. 164	Weatherley, Mrs. T. J., Slaley, Riding Mill, Northumberland (Tea Cloth).

CLASS 9. EMBROIDERY.—Coloured.—Premiums, £3, £2, and £1.

1st	No. 170	Grant, Mrs., Coulmore, Kessock, Inverness (Sampler).
2nd	No. 181	Weir, Mrs. H. C., Schoolhouse, Winchburgh (Sampler).
3rd	No. 179	Todd, Mrs. Janet S., St Ronans, Kinross (Fender Stool).
V	No. 166	Dunlop, Miss J. L., Craigraploch, Castle-Douglas (Table Scarf).
H	No. 174	Neish, Miss F. J., Affleck, Monikie (Tea Cloth).
C	No. 180	Weir, Mrs. H. C., Schoolhouse, Winchburgh (Panel).

CLASS 10. LEATHER GLOVES.—Premiums, £2, £1, and 10s.

1st	No. 186	Dunchurch and Thurlaston Women's Rural Institute, Rugby.
2nd	No. 188	Dunchurch and Thurlaston Women's Rural Institute, Rugby.
3rd	No. 183	Dunchurch and Thurlaston Women's Rural Institute, Rugby.
V	No. 190	Jack, Miss E. M., Colinsburgh, Kilconquhar, Fife.
H	No. 184	Dunchurch and Thurlaston Women's Rural Institute, Rugby.
C	No. 187	Dunchurch and Thurlaston Women's Rural Institute, Rugby
C	No. 192	Kiernander, Mrs. L. A., Drumley House, Annbank Station.
C	No. 195	Wilson, Mrs. Amy, Cartmel, Grange-over-Sands.

CLASS 11. SPECIMENS OF LEATHER WORK OTHER THAN GLOVES.—Premiums, £2, £1, and 10s.

1st	No. 212	Roger, Mrs., Balgove, St Andrews (Dressing Case).
2nd	No. 200	Dunchurch and Thurlaston Women's Rural Institute, Rugby (Pouffe).
3rd	No. 205	Jamieson, Mrs. I. A., Schoolhouse, Aberlady (Handbag).
V	No. 198	Burns, Miss A. M., Fernleigh, Melrose (Fire Screen).
H	No. 201	Dunchurch and Thurlaston Women's Rural Institute, Rugby (Bag).
C	No. 207	Lamont, Miss J. N., 97 Myrtlefield Park, Belfast (Handbag).
C	No. 209	Neale, Miss V. C., Bovindene, Playden, Rye, Sussex (Blotter).

CLASS 12. SPECIMEN OF FURCRAFT.—Premiums, £2, £1, and 10s.

1st	No. 216	Allison, Miss M. D., Kinnaird Castle, Brechin (Fox Stole).
2nd	No. 224	Marshall, Mrs. G. R., Post Office Buildings, Symington, Lanarkshire (Gloves).
3rd	No. 223	M'Gechen, Miss E., Parton Gardens, Parton, Kirkcudbright (Travelling Rug).

CLASS 13. SPECIMEN OF HAND-PAINTED POTTERY.—Premiums, £2, £1, and 10s.

1st	No. 236	Murray, Miss Annie, U.F. Manse, Aberlady (Strawberry Set).
2nd	No. 230	"Mak' Merry Studio," Macmerry, East Lothian (Bowl).
3rd	No. 238	Weir, Mrs. H. C., Schoolhouse, Winchburgh (Bowl).
V	No. 227	Jamieson, Mrs. I. A., Schoolhouse, Aberlady (Bowl).
H	No. 234	"Mak' Merry Studio," Macmerry, East Lothian (Porridge Set).
C	No. 231	"Mak' Merry Studio," Macmerry, East Lothian (Jug).
C	No. 235	"Mak' Merry Studio," Macmerry, East Lothian (Fruit Set).

CLASS 14. SPECIMEN OF BASKET-WORK (Rafia not eligible).—Premiums, £2, £1, and 10s.

1st	No. 243	Pendrigh, Miss Lily, Catcune House, Gorebridge (Work Basket).
2nd	No. 246	Weir, Mrs. H. C., Schoolhouse, Winchburgh (Tray).
3rd	No. 240	Fyfe, Mrs. Margaret, Meoul Schoolhouse, Sandhead, Wigtownshire (Cane Basket).

CLASS 15. BOTTLED FRUIT and VEGETABLES (three bottles, bottled in or before 1924).—Premiums, £2, £1, and 10s.

1st	No. 248	M'Feat, Miss Annie, Kingswells, Auchterarder (Fruit Salad, Apple Rings, Tomatoes).
2nd	No. 250	"Mak' Merry Studio," Macmerry, East Lothian (Plums, Gooseberries, Blackcurrants).
3rd	No. 249	"Mak' Merry Studio," Macmerry, East Lothian (Plums, Gooseberries, Peas).

CLASS 16. BEST COLLECTION OF VEGETABLE-DYED WOOLS.—Premiums, £2, £1, and 10s.

1st	No. 253	M'Kenzie, Mrs. Kenneth, 41 Big Sand, Gairloch, Ross-shire.
2nd	No. 254	Murray, Miss Margaret, Tressidy Hill, Lairg, Sutherlandshire.

CLASS 17. HOME-SPUN YARN—2-3 cuts.—Premiums, £2, £1, and 10s.

1st	No. 261	Sutherland, Miss E. C., 10 Chromate Lane, Lerwick.
2nd	No. 262	Thomson, Miss M., Norwick, Haroldswick, Shetland.
3rd	No. 255	Abernethy, Mrs. M., Lochend, North Mavine, Shetland.

CONFINED CLASSES.

Open to Institutes and Members of Institutes in the whole of Scotland.

CLASS 18. LACE OF ALL KINDS, other than Crochet.—Premiums, £3, £2, and £1.

1st	No. 268	Simpson, Mrs. I. A., 9 Palmerston Place, Edinburgh (Lacis filet brodé).
2nd	No. 264	Arradoul Women's Rural Institute, Buckie (Filet Lace).
3rd	No. 267	"Mak' Merry Studio," Macmerry, East Lothian (Filet Lace)
V	No. 266	M'Cormick, Miss J. W., Port of Spittal, Portpatrick, Stranraer (Knitted Lace).

CLASS 19. KNITTED JUMPER OR JERSEY, other than Fair Isle.—Premiums, £3, £2, and £1.

1st	No. 273	Douglas, Mrs. A. B., Victoria Bank, 5 Viewforth Terrace, Edinburgh (Jumper).
2nd	No. 277	Gordon, Miss Alexina, Broompark Farm, Murthly (Jumper).
3rd	No. 279	Munro, Mrs. E., U.F. Manse, Taynuilt, Argyllshire (Jumper).
V	No. 276	Gooch, Miss M. B., Tor Castle, Banavie (Jersey Coat).

Confined to Institutes and Members of Institutes in the South-Western Area of Scottish Women's Rural Institutes.

CLASS 20. RUG—made from old material.—Premiums, £2, £1, and 10s.

1st	No. 284	Hamilton, Miss Mary, S., Lochanbank, Kirkmuirhill, Lanarkshire.
2nd	No. 289	Scott, Miss A., Arnmannoch, Dalbeattie.
3rd	No. 290	Scott, Mrs. James, Breconside Cottage, Durisdeer, Thornhill.
V	No. 282	Andrews, Miss Annie B., Shilford, Neilston.
H	No. 286	M'Conochie, Miss May, Ford Farm, Castle-Douglas.

CLASS 21. EMBROIDERY—Woollen.—Premiums, £2, £1, and 10s.

1st	No. 295	Maclellan, Miss Flora, 41 Wilson Street, Beith, Ayrshire (Portiere).
2nd	No. 294	Harvie, Miss N. H., Gavinbank Cottage, Blackwood, Lanarkshire (Cushion).
3rd	No. 302	Quothquon Women's Rural Institute, Cormiston, Biggar (Cushion).
V	No. 307	Stewart, The Hon. Lady Mactaggart, Ardwell, Stranraer (Stool Cover).
H	No. 306	Stevenson, Mrs. L. W., The Schoolhouse, Stoneykirk, Stranraer (Table Scarf).

CLASS 22. STOCKINGS (Men's or Women's), 5-ply fingering.—Premiums, £2, £1, and 10s.

1st	No. 314	Thomson, Mrs. J., Dildawn Kennels, Castle-Douglas (Women's).
2nd	No. 313	Thomson, Mrs. J., Dildawn Kennels, Castle Douglas (Men's).
3rd	No. 312	Stevenson, Mrs. L. W., The Schoolhouse, Stoneykirk, Stranraer (Men's).

CLASS 23. HOME-CURED HAM.—Premiums, £2, £1, and 10s.

C	No. 315	Weir, Miss Agnes, Kells, Preston Mill, Dumfries.

CLASS 24. Special Prizes to the Institute winning the largest number of prizes in Classes 20, 21, 22, and 23. First Prize to count 6 points; Second Prize, 5 points; Third Prize, 4 points; V.H.C., 3 points; H.C., 2 points; and C., 1 point.—Premiums, £3, £2, and £1.

1st	Rhonehouse Women's Rural Institute (13 points).
2nd	Blackwood Women's Rural Institute (11 points).
3rd equal	Beith Women's Rural Institute (6 points). Stoneykirk Women's Rural Institute (6 points).

HORSE SHOEING.

**Open to Shoeing-Smiths from any part of Great Britain,
Northern Ireland, and Irish Free State.**

CLASS 1. CART HORSES (OPEN CLASS). **First Prize, £5 and Gold Watch; Second Prize, £5 and Canteen of Cutlery; Third Prize, £5 and Gold Medal; Fourth Prize, £4 and Gold Medal; Fifth Prize, £3; Sixth Prize, £2; Seventh Prize, £2; Eighth Prize, £1.**

1st	No. 65	Hall, Robert, Muirhead Smithy, Chryston, Glasgow.
2nd	No. 17	Hall, James, Halfway House, Cardonald.
3rd	No. 37	Macdonald, Charles, 57-59 Eastgate, Inverness.
4th	No. 4	Chalmers, Alexander, Cameron Smithy, Cameron Bridge.
5th	No. 12	Ross, James, 90 Renfrew Hurlet, Nitshill.
6th	No. 44	Lackie, James, Westmuir, Kirriemuir.
7th	No. 52	Fenwick, Robert, Victoria Shoeing Forge, Dundee.
8th	No. 13	Marshall, Robert, Greenhills, Beith.

CLASS 2. CART HORSES (Juniors under twenty-three years of age).—**First Prize, £5 and Clock; Second Prize, £3 and Canteen of Cutlery; Third Prize, £2 and Gold Medal; Fourth Prize, £1 and Gold Medal; Fifth Prize, £1.**

1st	No. 7	Steel, Andrew, 8 John Street, Gourock.
2nd	No. 5	Baillie, James, Ruthven Works, Meigle.
3rd	No. 1	MacDonald, Allan, Blairninich Smithy, Strathpeffer
4th	No. 3	Farmer, William, Ballinbreich Terrace, Leslie, Fife.
5th	No. 11	Malcolm, John, Roughlands Smithy, Carron, Falkirk.

NEW IMPLEMENTS.

The Judges, having inspected the new implements submitted for competition, have awarded the Society's Silver Medal to the following:—

Baxendale & Co., Ltd., Manchester (No. 1719)—A Force Delivery and Self-Cleaning Distributor for Artificial Manure.

International Harvester Co. of Great Britain, Ltd., London (No. 853)—The "Deering" Power-Drive Binder.

M'Bain Brothers, Ltd., Berwick-on-Tweed (No. 294)—An Improved Wind Engine Wheel.

Ransomes, Sims & Jefferies, Ltd., Ipswich (No. 53)—A Grass Rejuvenator.

Wallace, John & Sons, Ltd., Glasgow (No. 639)—An Improved Wheel and Peg Arrangement.

Watson, Laidlaw & Co., Ltd., Glasgow (No. 1679)—A method for electrically driving Cream Separators through a centrifugal clutch.

JUDGES.

Shorthorn.—James Fenwick, Redgorton Estate Office, Redgorton, Perth; J. H. Toppin, Musgrave Hall, Skelton, Penrith.

Aberdeen-Angus.—F. G. M'Conachie, Connage, Buckie; James Beddie, Banks, Strichen.

Galloway.—James Clark, Auchenhay, Corsock, Dalbeattie.

Belted Galloway.—William Hyslop, Knockycoid, Barrhill, Ayrshire.

Highland.—Peter M'Intyre, Tighnablair, Comrie.

Dairy Shorthorn.—No exhibits.

Ayrshire.—John Young, Mouswald Grange, Ruthwell; George Dunlop, Craigraploch, Castle-Douglas.

British Friesian.—Alexander Munro of Leanach, Culloden Moor, Inverness; Alexander Wilson, Thornleypark House, Paisley.

Red Poll.—Herbert Blofield, Billingford Hall, Diss, Norfolk.

Fat Cattle.—J. Fenwick, Redgorton Estate Office, Redgorton, Perth; James Beddie, Banks, Strichen.

Draught Stallions, Entire Colts, and Geldings.—Andrew Renwick, Skateraw, Innerwick; Robert Park, Brunstane, Portobello; James Weir, Sandilands, Lanark.

Draught Mares and Fillies.—John Leckie, Easter Shirva, Twechar; John Cocker, Hill of Petty, Fyvie; Andrew Renwick, Buchley, Bishopbriggs.

Hunters and Riding Ponies.—E. W. Hope-Johnstone, Clonhugh, Multyfarnham, County Westmeath; Charles H. Herdman, Friarshall, Gattonside, Melrose.

Hackneys and Ponies.—Thomas Prentice, Loancroft, Uddingston.

Highland Ponies.—John M. Macdonald, Whitfield, West Linton.

Western Island Ponies.—Colin Campbell, Shiel Lodge, Glenshiel, *via* Kyle of Lochalsh.

Shetland Ponies.—Walter A. Aitkenhead, Haining Valley, Linlithgow; J. F. Christie, Auchendennan, Arden, Dumbartonshire.

Harness Horses.—Thomas Prentice, Loancroft, Uddingston; R. G. Heaton, Northaw House, nr. Potters Bar, Herts.

Draught Geldings in Harness.—John Cocker, Hill of Petty, Fyvie; Robert Park, Brunstane, Portobello.

Blackface Sheep.—Thomas Macmillan, Glencrosh, Moniaive; William Sandilands, Muldron, Fauldhouse; Duncan M'Donald, Inchadney, Aberfeldy.

Cheviot. — Robert Shiel, Sourhope, Kelso; Joshua Murray, Corsebank, Sanquhar.

Border Leicester.—William Faulder, Oak Bank, Longtown, Cumberland; James Wallace, Chapelhill, Dunrod, Castle-Douglas.

Half-Bred and Fat Sheep. — Andrew Douglas, Saughtree, Newcastleton.

Oxford Down.—H. B. Ireland, Ballindean, Kilmany, Dundee.

Suffolk.—S. R. Sherwood, Playford, Ipswich.

Shropshire.—Alfred Mansell, College Hill, Shrewsbury.

Dorset Horn.—Alfred Mansell, College Hill, Shrewsbury.

Goats.—Captain H. D. J. K. Greenway, 28 Collingham Gardens, London, S.W. 5.

Large White Pigs.—George A. Bruce, Inschfield, Insch, Aberdeenshire.

Middle White. — W. Hallas, Bank House Farm, Helsby, *via* Warrington.

Berkshire.—Alfred Mansell, College Hill, Shrewsbury.

Large Black.—A. T. Wright, East Reston, Reston, Berwickshire.

Cumberland.—A. H. Fox-Brockbank, The Croft, Kirksanton, Silecroft, S.O., Cumberland.

Large White Ulster.—John Wallace, Anticur, Dunloy, County Antrim.

Poultry. — William Huntly, Hirsel Poultry Farm, Coldstream, *Classes* 89 to 113 inclusive; John Meikle, Camregan, Girvan, *Classes* 13 to 22, 47 to 50, 59 to 70; R. Stainthorp, Vine Cottage, Staindrop Road, Darlington, *Classes* 23 to 46, 71 to 78, 85 to 88; C. M. Crichton, Estates Office, Laurencekirk, *Classes* 1 to 12, 51 to 58, 79 to 84.

Dairy Produce.—William M'Fadzean, 35 Dundonald Road, Kilmarnock.

Rabbits.—T. J. Ambrose, Cliftonia, Syston, Leicester.

Honey, &c.—L. M'D. Thake, Fife Bee Garden, Dura Den, Cupar.

Wool.—Alexander Reid, 68 Hydepark Street, Glasgow.

Rural Industries.—A. E. Kellond, of Messrs Pettigrew & Stephens, Ltd., Sauchiehall Street, Glasgow, and John W. Thomson, of Messrs Copland & Lye, Ltd., Caledonian House, Sauchiehall Street, Glasgow, *Classes* 1, 2, 3, 4, 5, 6, and 12; Miss Bruce, 111 George Street, Edinburgh, *Classes* 7, 16, 17, 19, 20, and 22; Miss Pearce, Edinburgh Ladies' College, Queen St., Edinburgh, *Classes* 8, 9, 14, 18, and 21; Mrs Geoffrey Gordon, 2 Eton Terrace, Edinburgh, *Classes* 10, 11, and 13; John Mitchell, Union Buildings, Aberdeen, *Class* 15; Bailie William Davidson (John Laird & Co.), 51-55 Ingram Street, Glasgow, *Class* 23.

Horse-Shoeing. — Professor John R. M'Call, M.R.C.V.S., 331 Byres Rd., Hillhead, Glasgow; Thomas B. Begg, Parkhall House, East Kilbride; William Johnston, Blacksmills, Pitscottie, Cupar-Fife.

ATTENDING MEMBERS.

Shorthorn.—*Harry Armour, James Gray,* James Brown, Robert Dickie, Robert Findlay.

Aberdeen-Angus and Fat Cattle.—*James Grieve, George Will,* Richard Dunn, Robert M'Alister.

Galloway.—Major William H. Goff.

Belted Galloway.—*Alexander Robertson,* Matthew Bowie.

Highland.—*Sir Hugh Shaw Stewart, Bart., C.B.,* Daniel Gardner, H. Macdiarmid.

Dairy Shorthorns.—(No exhibits.)

Ayrshire.—*N. H. Constable, James Gardner,* Professor R. J. Drummond, Donald Mackelvie, Eben J. More, J.P.

British Friesian. — *Thomas Elder, Dr T. G. Nasmyth,* John Dallas, D.L., J.P., Andrew B. Garroway.

Red Poll.—*Falconer L. Wallace,* John M. Hannah, W. Cassels Jack.

Draught Stallions. — *Sir Thomas Paxton, Bart., LL.D., John Stewart,* James Clark, John Gibb, George Laidler, James Wilson.

Draught Mares. — *William Low, Captain John MacGillivray,* W. Betts Donaldson, George Pirie, John Rowand, R. C. Young.

Hunters and Riding Ponies. — *Lt.-Col. W. T. R. Houldsworth,* William Chassels, M.C., Norman P. Donaldson, Hugh Neilson, Sir Archibald M'Innes Shaw, James Symington, J.P.

Hackneys, Ponies, and Harness Horses.—*James Rodger,* Charles M. Collins, Bailie James A. Crearer, John Gilmour, Andrew Hunter.

Highland Ponies.—*Thomas Elliot,* James Murdoch, William Stevenson.

Western Island Ponies. — *A. A. Hagart Speirs,* The Hon. T. D. P. Corbett, John Mitchell.

Shetland Ponies.—*The Earl of Elgin and Kincardine, C.M.G.,* John Adam, David Cross.

Draught Geldings in Harness.—*Bailie George Kerr,* Matthew G. Hamilton, William Hunter.

Blackface Sheep. — *Thomas A. Buttar, A. W. Montgomerie,* James C. C. MacArthur, James J. Morton.

Cheviot.—*R. G. Murray,* Thomas C. Lindsay, James L. Mackenzie.

Border Leicester. — *John Elliot, Major R. W. Sharpe,* J. A. Lambie, Gavin Struthers.

Half-Bred and Fat Sheep. — *Bailie George Kerr,* William Fleming, John Gilchrist, F.S.I.

Oxford Down. — James Cochrane, N.D.A., Thomas Hogg.

Suffolk. — *Duncan M. Wallace,* Walter Adamson, D. K. Michie.

Shropshire and Dorset Horn.—*James Durno,* George Galloway, Principal W. G. R. Paterson.

Goats. — *Major James Kemp Smith,* John F. M'Gill, John Weir.

Large White Pigs. — *James A. Hunter,* Robert Cullen, Robert Young.

Middle White.—*John Speir,* John W. Crawford, A. M. Trotter, M.R.C.V.S.

Berkshire. — *James Durno,* George Galloway, Principal W. G. R. Paterson.

Large Black.—*Sir John Maxwell Stirling-Maxwell, Bart.,* Major T. A. Harvie Anderson, C.B., Gavin Hamilton.

Cumberland.—*Alexander P. Gordon,* James Barr.

Large White Ulster.—*Alexander P. Gordon,* Bailie Donald Fletcher.

Poultry. — *Dr J. F. Tocher,* George Alston, Wallace Fairweather, D.L., Duncan Forbes, William Greig, Robert J. Logan, William B. Martin.

Rabbits.—*The Earl of Elgin and Kincardine, C.M.G.,* Hugh M'Givern, D. S. Macrae.

Honey, Etc.—J. Aikman Blair, J. B. Greenshields, David Stenhouse.

Dairy Produce. — Brigadier-General J. Archibald Houison-Craufurd, Robert Jack.

Wool.—William Brown.

Rural Industries.—Mrs D. S. K. Eadie, Mrs E. L. Houison-Craufurd, Mrs David M'Cowan, Lady Paxton, Mrs Symington.

Horse-Shoeing.—*George Will, James Gardner, Alexander Murdoch,* George Pirie, William Greig, George G. M'Diarmid, Alexander Chalmers, Robert Orr.

II.—VETERINARY DEPARTMENT.

Class Examinations, 1925.

Silver Medals were awarded to the following :—

GLASGOW VETERINARY COLLEGE.

Junior Anatomy	John M. M'Donald, Glasgow.
Chemistry	Neil M'Arthur, Campbeltown.
Biology	Henry G. Stewart, Glasgow.
Senior Anatomy	Thomas Johnston, Glasgow.
Physiology	Thomas Johnston, Glasgow.
Zootechny	Andrew H. F. Robb, Glasgow.
Materia Medica	Malcolm MacColl, Armadale, Skye.
Pathology	Robert S. Marshall, Motherwell.
Hygiene	Malcolm MacColl, Armadale, Skye.
Surgery	David N. Walker, Salsburgh.
Medicine	Godfrey B. Simmins, Glasgow.

11 Large Silver Medals, £11.

ROYAL (DICK) VETERINARY COLLEGE.

Junior Anatomy	R. H. Brown, Broxburn.
Chemistry	F. W. Priestley, Burnley.
Biology	R. W. Paley, Walsall.
Senior Anatomy	J. M. Cummine, Turriff.
Physiology	G. Johnson, Gulberwick, Orkney.
Zootechny	R. Moore, Cardonagh, Ireland.
Materia Medica	H. Burrow, Lancaster.
Pathology	J. P. Walker, Stonehouse.
Hygiene	J. E. Wilson, Edinburgh.
Surgery	T. B. M'Clure, Londonderry.
Medicine	J. P. Cook, Cockermouth.

11 Large Silver Medals, £11.

III.—DISTRICT COMPETITIONS, 1925.

23 Districts—	19 Grants of £12 each ; 1 of £11 ; 2 of £10 ; and 1 of £9 (Section I.)	£268	0	0
8 "	Grants of £15 each	120	0	0
15 "	Special Grants	116	11	0
	Medals for Shows (44 large)	44	0	0
3 "	Medals for Cottages, Gardens, &c. (3 Minor)	1	4	0
32 "	Medals for Hoeing Competitions, 1924-25	12	16	0
203 "	Medals for Ploughing, 1924-25	86	5	6
94	Long Service Certificates, £33, 14s. 10d., and Medals, £49, 7s. (1924-25)	83	1	10
		£731	18	4

ABSTRACT OF PREMIUMS.

District Competitions	£648	16	6
Long Service Awards	83	1	10
Veterinary Colleges (22 Medals)	22	0	0
	£753	18	4

PERTH SHOW, 1924.

ALTERATIONS IN PRIZE LIST.

On account of animals failing to comply with the Regulations as to calving and foaling, the following changes have taken place in the list of animals for which prizes were awarded :—

CATTLE

SHORTHORN.

CLASS 7. COW or HEIFER, born on or after 1st December 1921.—Premiums, £10, £5, £3, and £2.

*	No. 53	Butters, James, Masterton, Dunfermline, Heifer, "Masterton Nonpareil 2nd" (34,229).
1st	No. 56	Fletcher, James Douglas, of Rosehaugh, Avoch, Ross-shire, Heifer, "Rosehaugh Clipper 5th" (36,350).
2nd	No. 59	M'Laren, A., Milrig, Kirkliston, Heifer, "Gateside Wimple" (33,721).
3rd	No. 60	Moubray, John J., of Naemoor, Rumbling Bridge, Heifer, "Naemoor Maud 5th" (40,315).
4th	No. 54	Crawford & Balcarres, The Earl of, K.T., Balcarres, Colinsburgh, Fife, Heifer, "Balcarres Gretta" (35,092).

ABERDEEN-ANGUS.

CLASS 18. COW or HEIFER, born on or after 1st December 1921.—Premiums, £10, £5, £3, and £2.

*	No. 157	Kerr, J. E., of Harviestoun, Dollar, Heifer, "Jeka Erica" (72,127).
1st	No. 158	Kerr, J. E., of Harviestoun, Dollar, Heifer, "Jessamine Erica" (72,129).
*	No. 162	Stewart, Sir R. K., K.B.E., of Murdostoun, Newmains, Heifer, "Black Bunty of Tullochgribban" (72,721).
2nd	No. 161	Petrie, John M'G., Asleid, New Deer, Aberdeen, Heifer, "Evaboxa" (72,547).
3rd	No. 163	Wilson, Walter, Inchgower, Buckie, Heifer, "Elemi 3rd" (73,237).
4th	No. 155	Findlay, Sir John R., K.B.E., of Aberlour, Aberlour House, Aberlour, Heifer, "Gentian 3rd of Aberlour" (71,638).

HIGHLAND.

CLASS. 31. COW or HEIFER, born in 1921.—Premiums, £10, £5, £3, and £2.

*	No. 268	Southesk, The Earl of, Kinnaird Castle, Brechin, Heifer, "Princess Maura VIII."
1st	No. 267	Maitland, Brig.-General J. D. Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, Heifer, "Fuinary Queen II. of Errol."
2nd	No. 262	Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, Heifer, "Bean Bhan X. of Atholl."
3rd	No. 263	Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, Heifer, "Bheadarach VI. of Atholl."

The animals failing to qualify are marked thus (*).

RITISH FRIESIAN.

CLASS 48. HEIFER in Calf with her first calf, to calve before 3 years old.—Premiums, £10, £5, and £3.

1st	No. 347	Macaulay, Andrew, Lathalmond Farm, Dunfermline, "Thornhill Jessie" (66,814).
*	No. 348	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, "Douneside Bessie" (60,910).
2nd	No. 352	Spence, Andrew, Commieston, Montrose, "Commieston Affannie" (60,166).
3rd	No 351	Sinclair, David, Loirston, Nigg, Aberdeen, "Loirston Janetta 2nd" (54,776).

HORSES

DRAUGHT MARES AND FILLIES.

CLASS 73. YELD MARE, born before 1921.—Premiums, £12, £9, £6, and £4.

1st	No. 510	Mackay, Robert, Ballochmartin, Millport, "Cherry Blossom" (52,607).
*	No. 513	Reith, Miss E. M., Kennerty Farm, Peterculter, Aberdeen, "Dunure Destiny" (54,865).
2nd	No. 509	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Fairy."
3rd	No. 508	Elliot, Charles S., Nisbet Hill, Duns, "Nisbet Harmony" (53,539).
4th	No. 511	M'Nee, John, Afton House, Crieff, "Belle of Dundurn" (50,827).

The animals failing to qualify are marked thus (*).

NEW IMPLEMENTS.

The Judges, having inspected the following New Implement in operation subsequent to the Show, awarded it the Society's Silver Medal:—

Glasgow Electrical Engineering Co., Ltd. (No. 399)—"Apex" Wind-Driven Dynamo.

STATE OF THE FUNDS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

As at 30th NOVEMBER 1925

I. BRITISH GOVERNMENT STOCKS—						
£19,300 5 per cent War Stock, 1929-47, at 100½ x.d. . .				£19,396	10	0
£1,679, 13s. 4d. 2½ per cent Consolidated Stock, at 56 .				940	12	3
£4,000 4½ per cent Conversion Loan, at 95½ x.d. . .				3,820	0	0
£6,200 3 per cent Local Loans Stock, at 64½ . . .				3,999	0	0
				£28,156	2	3
II. HERITABLE BONDS—						
£18,000 at 4⅝ per cent				18,000	0	0
III. RAILWAY DEBENTURE AND PREFERENCE STOCKS—						
£17,050 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 59 .	£10,059	10	0			
£11,554 Do. do. 4 per cent do., at 79	9,127	13	2			
£16,105 London Midland and Scottish Railway Co. 4 per cent Debenture Stock, at 80	12,884	0	0			
£1,500 Do. do. 4 per cent Preference Stock, at 73 . . .	1,095	0	0			
£703 Southern Railway Co. 4 per cent Debenture Stock, at 80	562	8	0			
£450 Do. do. 5 per cent Preference Stock, at 91½	411	15	0			
£112 Do. do. 5 per cent Guaranteed Stock, at 98¼	110	0	10			
				34,250	7	0
IV. BANK STOCKS—						
£5,000 0 0 Royal Bank of Scotland, at 318	£15,900	0	0			
£2,218 16 5 Bank of England, at 250 .	5,547	1	0			
£1,009 13 4 Bank of Scotland, at 338 .	3,412	13	6			
£2,850 0 0 "B" Shares, Barclay's Bank, at 55s.	7,837	10	0			
				32,697	4	6
V. COLONIAL GOVERNMENT STOCKS—						
£2,500 Dominion of Canada Registered 3½ per cent Stock (1930-50), at 83 . .	£2,075	0	0			
£2,500 New South Wales Inscribed 5 per cent Stock (1935-55), at 99 . .	2,475	0	0			
£2,500 Natal Inscribed 3½ per cent Stock (1914-39), at 85	2,125	0	0			
£2,000 Western Australia Inscribed 4 per cent Stock (1942-62), at 84 . .	1,680	0	0			
£1,120 Victorian Government Inscribed 3½ per cent Stock (1929-49), at 79 . .	884	16	0			
				9,239	16	0
VI. ANNUITY STOCK—						
£32 Edinburgh and Leith Corporation Gas Commissioners, at 20 1/16				642	0	0
Carry forward . .				£122,985	9	9

	Brought forward .		£122,985 9 9
VII.	TEMPORARY LOANS— With Edinburgh Corporation		3,000 0 0
VIII.	ESTIMATED VALUE of Buildings, No. 3 George IV. Bridge	£3,100 0 0	
IX.	ESTIMATED VALUE of Furniture, Paintings, Books, &c.	1,000 0 0	
			4,100 0 0
X.	ARREARS OF SUBSCRIPTIONS considered recoverable . .		347 2 0
XI.	BALANCES at 30th November 1925		2,080 11 5
	AMOUNT OF GENERAL FUNDS .		£132,513 3 2
XII.	SPECIAL FUNDS—		
	TWEEDDALE MEDAL FUND—		
	Heritable Bond, at 4¾ per cent		£500 0 0
	Sum on Deposit Receipt with British Linen Bank . .		81 10 3
			£581 10 3
	FIFE AND KINROSS PERPETUAL CHALLENGE CUP—		
	£268 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 59	£158 2 5	
	£201 Do. do. 4 per cent First Guaranteed Stock, at 75	150 15 0	
	Sum on Deposit Receipt with British Linen Bank	34 18 1	
			343 15 6
	PAISLEY GOLD CUP FUND—		
	£802 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 59	£473 3 7	
	Sum on Deposit Receipt with British Linen Bank	75 13 9	
			548 17 4
	RENFREWSHIRE GOLD CUP FUND—		
	£668 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 59	£394 2 5	
	Sum on Deposit Receipt with British Linen Bank	69 17 4	
			463 19 9
	WILLIAM TAYLOR MEMORIAL PRIZE FUND—		
	£401 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 59	£236 11 10	
	Sum on Deposit Receipt with British Linen Bank	58 4 1	
			294 15 11
	WILLIAM DUTHIE CHALLENGE CUP FUND—		
	£260 2½ per cent Consolidated Stock, at 56 .		145 12 0
	BALANCE WITH BRITISH LINEN BANK at 30th November 1925		61 1 3
	AMOUNT OF SPECIAL FUNDS . .		£2,439 12 0

DAVID WILSON, *Treasurer.*
F. J. CARRUTHERS, *Chairman.*
WM. HOME COOK, C.A., *Auditor.*

EDINBURGH, *6th January* 1926.

ABSTRACT of the ACCOUNTS of the HIGHLAND and

CHARGE.

1. Balances as at 30th November 1924			£1,994 15 6
2. Arrears of Subscriptions outstanding at 30th November 1924		£318 8 6	
Whereof due by Members who have compounded for life, and whose arrears are thereby extinguished . . .	£6 10 0		
Sums ordered to be written off	179 10 0		
		186 0 0	
			132 8 6
3. Interests and Dividends—			
(1) Interests—			
On Heritable Bonds, less Income-tax .		£673 6 3	
On Railway Debenture and Preference Stocks, do.		1,354 14 11	
On Colonial Government Stock, do. .		330 2 7	
On Annuity Stock, do. . . .		25 12 0	
On Edinburgh Corporation Loans, do. .		64 10 10	
On British Government Stocks, do. .		1,139 16 4	
On Deposit Receipt		1 3 7	
		£3,589 6 6	
(2) Dividends on Bank Stocks, less Income-tax .		1,229 9 6	
			4,818 16 0
4. Subscriptions—			
Annual Subscriptions		£2,722 18 6	
Life Subscriptions		1,283 2 0	
			4,006 0 6
5. 'Transactions'—Advertisements and Sales . . .			37 3 3
6. Income-tax repaid for year to 5th April 1925 . . .			1,084 12 5
7. Receipts from Perth Show, 1924			467 6 3
8. Receipts from Glasgow Show, 1925			21,323 14 6
9. Miscellaneous Receipts			453 6 0
10. Temporary Loans and Deposit Receipt uplifted . . .			1,452 6 0
Sum of Charge . .			£35,770 8 11

Edinburgh, *6th January* 1926.

AGRICULTURAL SOCIETY of SCOTLAND for Year 1924-1925.

DISCHARGE.

1. **Establishment Expenses**—		
Salaries and Wages—Secretary, £1250; Chief Clerk, £600; other Clerks, £500; Typist, £165; Messenger's Wages, £170		£2,685 0 0
Cleaning, £52; Retiring Allowance to Mrs Simpson, £30		82 0 0
Feu-duty, £22, 1s.; Taxes, £91, 8s. 5d.		113 9 5
Coal, Gas, and Electric Light		60 11 11
Repairs and Furnishings, £71, 16s 1d.; Telephone and Telegrams £33, 13s. 4d.; Insurance, £74, 7s. 5d.; Special Annuity Premiums, £51, 8s. 9d		231 0 7
		£3,172 1 11
2. **Fee** to Auditor of Accounts for 1923-1924		75 0 0
3. **Education**		69 9 5
4. **Chemical Department**—		
Fee to Chemist	£100 0 0	
Analyses for Members and Expenses	471 15 3	
		571 15 3
5. **Veterinary Department**—		
Medals to Students		22 0 0
6. **Dairy Department**—		
Expenses of Examination held at Kilmarnock	£267 18 11	
Less Entry Fees	107 2 0	
		160 16 11
7. **Society's 'Transactions'**		1,789 9 10
8. **Ordinary** Printing, £165, 11s. 10d.; Advertising, £52, 13s. 6d.; Stationery, Books, &c., £141, 18s. 8d.; Postages, &c., £150; Bank and Post Office Charges, £11, 18s. 11d.		522 2 11
9. **Salary** of Consulting Engineer		150 0 0
10. **Grant** to Public Society		5 0 0
11. **Miscellaneous** Payments		196 1 0
12. **Investments** made		4,010 18 6
13. **Sums** lodged on Temporary Loan and Deposit Receipt		4,452 6 0
14. **Expenses** in connection with Perth Show, 1924		199 0 0
15. **Expenses** in connection with Glasgow Show, 1925—		
Premiums, £3714; Medals, £36, 2s.; Expenses of Show, £13,346, 18s. 8d. (as per page 423)		17,097 0 8
16. **Expenses** in connection with future Shows		18 7 3
17. **Premiums** and Medals for Local Shows and District Competitions		610 12 6
18. **Certificates** and Medals for Long Service		102 1 10
19. **Expenses** in connection with Conferences and Meetings		24 4 6
20 **Arrears** removed from Subscription List at 30th November 1925		144 7 0
21. **Arrears** of Subscriptions outstanding at 30th November 1925		347 2 0
22. **Balances** at 30th November 1925—		
On Account Current with Royal Bank of Scotland—		
Edinburgh Account	£1,855 14 10	
London Account	223 10 0	
	£2,079 4 10	
In hands of Secretary	1 6 7	
		2,080 11 5
Sum of Discharge		£35,770 8 11

DAVID WILSON, *Treasurer.*
F. J. CARRUTHERS, *Chairman.*
WM. HOME COOK, C.A., *Auditor.*

ABSTRACT of the ACCOUNTS

CHARGE.

	£	s.	d.	£	s.	d.
1. Local Subscription—						
Corporation of Glasgow				£525	0	0
2. Amount Collected during Show—						
Gates	£9,778	15	5			
Grand Stand	1,870	5	6			
Catalogues and Awards	938	19	8			
Tickets sold	43	19	9			
Rent of Motor Garage and Chauffeurs' Tickets .	162	5	0			
Cloak-Rooms and Lavatories . . .	61	2	6			
				12,855	7	10
3. Forage Sold				9	5	8
4. Rent of Stalls				6,234	7	6
5. Do. Refreshment Booths				620	0	0
6. Advertisements in Catalogue and Premium List . .				342	18	0
7. Subscriptions in Aid of Premiums				646	10	0
8. Telephone Calls in Showyard				63	5	1
9. Bank &c., Interest				27	0	5
				£21,323	14	6

	£21,323	14	6

Note.—From the above balance of	£4226	18	10
Deduct Premiums undrawn at 30th November . . .	223	10	0
	£4003	8	10
To the above balance there falls to be added sums due by Exhibitors for fitting up stands, amounting to . .	88	18	5
Probable surplus . . .	£4092	2	3

Edinburgh, 6*th January* 1926.

of the GLASGOW SHOW, 1925.

DISCHARGE.

1. SHOWYARD—						
Fitting up Showyard				£3,850	0	0
Bell & Sime—Hire of Timber				2,809	5	0
Rosettes, £60; Penning Poultry and Rabbits, £48, 14s. 9d.	£108	14	9			
Railway Carriage, Luggage, Catalogues, Sleepers, Poultry, and Rabbits	199	6	11			
Elsan Manufacturing Co.—Chemical Closets	50	8	0			
Goodwin & Clark—Tripod Judging Stands	33	15	0			
W. T. Ellison & Co.—4 Turnstiles	73	10	0			
				465	14	8
Salary to John Reid, Showyard Erecter				500	0	0
2. FORAGE and Bedding for Stock				444	13	6
3. POLICE, Fire Brigade				25	17	6
4. TRAVELLING EXPENSES of Judges, Stewards, &c.				332	2	2
5. HOTEL AND LUNCHEONS—						
Hotels for 22 Directors, 18 Stewards, and 37 Judges	£260	17	4			
Luncheons in Showyard for Directors, Judges, Attending Members, South African Visitors, Press and Staff, and Breakfasts, Rooms, &c.	710	6	11			
				971	4	3
6. ASSISTANTS and Attendants				635	10	8
7. MUSIC				165	7	6
8. PRINTING, Members' Badges, and Stationery				1,625	5	1
9. ADVERTISING and Bill-posting				999	8	4
10. GRANT to Highland Industries Stand				5	0	0
11. GRANT to Forestry Exhibit				23	0	0
12. GRANT to Scottish National Pig Breeders' Association				25	0	0
13. VETERINARY INSPECTION				10	10	0
14. CONCERT for Attendants				6	3	6
15. SHOW TREASURER				50	0	0
16. POSTAGES				131	0	0
17. POST OFFICE and Telephones				129	7	6
18. AMBULANCE				10	10	0
19. MISCELLANEOUS				131	19	0
				£13,346	18	8
20. PREMIUMS drawn at 30th November 1925				3,750	2	0
				£17,097	0	8
CR. BALANCE				4,226	13	10
				£21,323	14	6

DAVID WILSON, *Treasurer.*
F. J. CARRUTHERS, *Chairman.*
WM. HOME COOK, C.A., *Auditor.*

ABSTRACT of the ACCOUNTS of the

CHARGE.

I. **Funds as at 30th November 1925—**			
Amount on Heritable Bond at 4¾ per cent . . .			£3,500 0 0
£3,193 London and North-Eastern Railway Company 3 per cent Debenture Stock, purchased at			2,650 0 0
£926, 16s. 3d. 3½ per cent Conversion Loan, purchased at .			709 19 4
£500 Queensland 3½ per cent Inscribed Stock, 1950-70, purchased at			450 1 0
£412 London Midland and Scottish Railway Company 4 per cent Debenture Stock, purchased at			611 10 6
£190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock, purchased at			259 1 11
			£8,180 12 9
Balance on Account Current with Royal Bank of Scotland .			168 2 11
			£8,348 15 8
II. **Interest on Investments—**			
On £3500 on Heritable Loan at 4¾ per cent, for year to Martinmas 1925		£166 5 0	
Less tax		35 6 6	
		£130 18 6	
On £3193 London and North-Eastern Railway Company 3 per cent Debenture Stock, for year to 30th June 1925 . .	£95 15 10		
Less tax . . .	20 19 1		
		74 16 9	
On £926, 16s. 3d. 3½ per cent Conversion Loan, for year to 1st October 1925 .	£32 8 8		
Less tax . . .	6 17 9		
		25 10 11	
On £500 Queensland 3½ per cent Inscribed Stock, 1950-70, for year to 30th June 1925 . .		17 10 0	
On £412 London Midland and Scottish Railway Company 4 per cent Debenture Stock, for year to 30th June 1925 . .	£16 9 6		
Less tax . . .	3 12 1		
		12 17 5	
On £190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock, for year to 30th June 1925 .	£7 12 0		
Less tax . . .	1 13 3		
		5 18 9	
			267 12 4
III. **Income-tax** repaid for year to 5th April 1925 . . .			71 13 1
Sum of Charge . .			£8,688 1 1

Edinburgh, *6th January* 1926

ARGYLL NAVAL FUND for the Year 1924-1925.

DISCHARGE.

I. **Allowances** to the eight following Recipients—						
I. G. Maclean (tenth year)				£40	0	0
A. F. Campbell (eighth year)				40	0	0
R. A. Forbes (sixth year)				40	0	0
J. H. Forbes (fourth year)				40	0	0
D. G. Macintyre (fourth year)				40	0	0
I. H. Dundas (third year)				40	0	0
C. D. Bonham-Carter (third year)				40	0	0
W. J. R. Campbell (second year)				40	0	0
				£320	0	0
II. **Funds** at 30th November 1925—						
Amount on Heritable Loan at 4¾ per cent.	£3,500	0	0			
£3,193 London and North-Eastern Railway Company 3 per cent Debenture Stock, purchased at	2,650	0	0			
£926, 16s. 3d. 3½ per cent Conversion Loan, purchased at	709	19	4			
£500 Queensland 3½ per cent Inscribed Stock, 1950-70, purchased at	450	1	0			
£412 London Midland and Scottish Railway Company 4 per cent Debenture Stock, purchased at	611	10	6			
£190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock, purchased at	259	1	11			
	£8,180	12	9			
Note.—The above Funds are entered at cost price. The value at 30th November 1925 was £6926, 8s. 3d.						
Balance on Account Current with Royal Bank of Scotland	187	8	4			
				8,368	1	1
Sum of Discharge				£8,688	1	1

DAVID WILSON, *Treasurer.*
F. J. CARRUTHERS, *Chairman.*
WM. HOME COOK, C.A., *Auditor.*

VIEW OF RECEIPTS AND PAYMENTS
For the Year 1924-1925.

RECEIPTS.

1. **Annual Subscriptions and Arrears** received		£2,363 18 0
2. **Life Subscriptions**		1,283 2 0
3. **Interests and Dividends**—		
Interests	£3,589 6 6	
Dividends	1,229 9 6	
		4,818 16 0
4. '**Transactions**'—Advertisements and Sales		37 3 3
5. **Income-tax** repaid for year to 5th April 1925		1,084 12 5
6. **Receipts** from Perth Show, 1924		467 6 3
7. **Receipts** from Glasgow Show, 1925		21,323 14 6
8. **Miscellaneous** Receipts		453 6 0
		£31,831 18 5

PAYMENTS.

1. **Establishment Expenses**—			
Salaries and Wages		£2,685 0 0	
Cleaning and Retiring Allowances		82 0 0	
Feu-duty, Taxes, Coal, Gas and Electric Light, Insurance, Repairs, and Furnishings		405 1 11	
		£3,172 1 11	
2. **Fee to Auditor** of Accounts, 1923-1924		75 0 0	
3. **Education**—N.D.A. Examination and Forestry		69 9 5	
4. **Chemical Department**		571 15 3	
5. **Veterinary Department**		22 0 0	
6. **Dairy Department**		160 16 11	
7. **Society's 'Transactions'**		1,739 9 10	
8. **Ordinary** Printing, Advertising, Stationery, Books, Postages, and Bank Charges		522 2 11	
9. **Salary** of Consulting Engineer		150 0 0	
10. **Grant** to Public Society		5 0 0	
11. **Miscellaneous** Payments		196 1 0	
12. **Payments** on account of Perth Show, 1924		199 0 0	
13. **Payments** on account of Glasgow Show, 1925—			
Premiums	£3,750 2 0		
Expenses	13,346 18 8		
		17,097 0 8	
14. **Expenses** in connection with future Shows		18 7 3	
15. **Premiums and Medals** for Local Shows and District Competitions		610 12 6	
16. **Certificates and Medals** for Long Service		102 1 10	
17. **Expenses** in connection with Conferences and Meetings		24 4 6	
			24,735 4 0
Balance of Receipts			£7,096 14 5

DAVID WILSON, *Treasurer.*
F. J. CARRUTHERS, *Chairman.*
WM. HOME COOK, C.A., *Auditor.*

Edinburgh, *6th January* 1926.

PROCEEDINGS AT BOARD MEETINGS.

MEETING OF DIRECTORS, 1st APRIL 1925.

Mr J. T. M'Laren, The Leuchold, Dalmeny, in the Chair.

Present.—Ordinary Directors—Mr Harry Armour; Colonel F. J. Carruthers; Mr Thomas Elder; the Earl of Elgin and Kincardine, C.M.G.; Mr John Elliot; Mr William Elliot; Mr James Gray; Lieut.-Colonel W. T. R. Houldsworth; Mr J. Ernest Kerr; Mr William Low; Mr John M'Caig; Mr Duncan M'Laren; Mr Robert Macmillan; Alexander Murdoch; Dr Thomas G. Nasmyth; Mr Alexander Robertson; Mr G. Bertram Shields; Major Mark Sprot; Mr John Stewart; Mr Falconer L. Wallace. *Extraordinary Directors*—Mr Thomas A. Buttar; Mr N. H. Constable; Mr James Gardner; Mr W. P. Gilmour; Mr James Grieve; Mr James R. Lumsden; Mr James M'Laren; Mr J. T. M'Laren; Mr James M'Queen; Sir Thomas Paxton, Bart., LL.D.; Mr John Speir. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Consulting Engineer*—Professor R. Stanfield.

Letters.

The following letters were submitted:—

Mrs Kirk, Abbeymains.—Thanks for Minute of sympathy on the death of her husband, the late Mr Thomas Kirk.

Glasgow District Union, B.W.T.A.—Thanks for free site for Refreshment Stand at Glasgow Show.

Glasgow Show, 1925.

Attending Members.—The following Directors were appointed as attending members: *Shorthorn*—Harry Armour and James Gray; *Aberdeen-Angus and Fat Cattle*—James Grieve and George Will; *Galloway*—James M'Queen; *Belted Galloway*—Alexander Robertson; *Highland*—Sir Hugh Shaw Stewart, Bart., C.B.; *Dairy Shorthorn*—Sir David Wilson, Bart.; *Ayrshire*—N. H. Constable and James Gardner; *British-Friesian*—Thomas Elder and Dr T. G. Nasmyth; *Red Poll*—Falconer L. Wallace; *Draught Stallions*—Sir Thomas Paxton, Bart., LL.D., and John Stewart; *Draught Mares*—William Low and Captain John MacGillivray; *Hunters and Riding Ponies*—Lieut.-Colonel W. T. R. Houldsworth; *Hackneys, Ponies, and Harness Horses*—James Rodger; *Highland Ponies*—Thomas Elliot; *Western Island Ponies*—A. A. Hagart Speirs; *Shetland Ponies*—The Earl of Elgin and Kincardine, C.M.G.; *Draught Geldings in Harness*—Bailie George Kerr; *Blackface Sheep*—Thomas A. Buttar and A. W. Montgomerie; *Cheviot*—R. G. Murray; *Border Leicester*—John Elliot and Major R. W. Sharpe; *Half-Bred and Fat Sheep*—Bailie George Kerr; *Oxford Down*—Peter Grant; *Suffolk*—Duncan M. Wallace; *Shropshire and Dorset Horn*—James Durno; *Goats*—Major James Kemp Smith; *Large White Pigs*—James A. Hunter; *Middle White*—John Speir; *Berkshire*—James Durno; *Large Black*—Sir John Maxwell Stirling-Maxwell, Bart.; *Cumberland and Large White Ulster*—Alexander P. Gordon; *Poultry*—Dr J. F. Tocher; *Rabbits*—The Earl of Elgin and Kincardine, C.M.G.

Local Committee.—The Secretary reported that, at a Meeting of Local Directors, held at Glasgow on 18th March, additional members of the Local Committee of Management from the Glasgow Show Division had been appointed.

Rural Industries Section.—The SECRETARY reported that the following had accepted appointment as Judges in the Rural Industries Section at the Show: A. E. Kellond of Messrs Pettigrew & Stephens, Ltd., Sauchiehall Street, Glasgow, and John W. Thomson of Messrs Copland & Lye, Ltd., Caledonian House, Sauchiehall Street, Glasgow—Classes 1, 2, 3, 4, 5, 6, and 12; Miss Bruce, 111 George Street, Edinburgh—Classes 7, 16, 17, 19, 20, and 22; Miss Pearce, Edinburgh Ladies' College, Queen Street, Edinburgh—Classes 8, 9, 14, 18, and 21; Mrs Geoffrey Gordon, 2 Eton Terrace, Edinburgh—Classes 10, 11, and 13; John Mitchell, Union Buildings, Aberdeen—Class 15; Bailie William Davidson, 51 Ingram Street, Glasgow—Class 23.

Rabbit Section.—A Minute of Meeting of Special Sub-Committee, dated 1st April, was read and approved. The Minute recommended (*a*) the appointment of Mr T. J. Ambrose, Cliftonia, Syston, Leicester, as Judge of Rabbits, (*b*) that the Scottish Fur-Breeders' Association be requested to nominate two members in the Glasgow District to act as attending members, and (*c*) that Rabbits be admitted to the Showyard between 5 and 9 P.M. on Tuesday evening, judged on Wednesday morning, and exhibited on Wednesday, Thursday, and Friday.

Stewards of Stands.—In view of the death of Mr Thomas Kirk of Abbeymains, Mr James M'Queen of Crofts was appointed principal Steward of Stands, and Major R. W. Sharpe of The Park, Earlston, was appointed Assistant Steward.

Meteorological Office Weather Forecasts.—A letter was submitted from the Board of Agriculture for Scotland, containing a suggestion that a demonstration be given by the Meteorological Office at the Board's Pavilion in the Showyard, illustrating the services that can be rendered to farmers by its agency. The chief features of the demonstration would be the receipt by wireless telegraphy of current observations and the construction of a chart and forecast based on these observations. It was agreed to inform the Board of Agriculture that the Directors were in favour of the proposal.

Stack Drying.—A suggestion for a demonstration of Stack Drying by means of hot air was remitted to the Implement Committee, along with the Convener of the Forage Committee, for consideration and report.

Perth Show, 1924.

Professor Stanfield, Consulting Engineer, reported that the Judges of New Implements had decided to award the Society's Silver Medal to the Exhibitors of the "Apex" Wind-driven Dynamo for supplying electric light and power. This machine was exhibited as a new implement at the Perth Show, and had recently been inspected in operation at Port Seton.

Border Show, 1926.

Mr J. T. M'LAREN, Chairman of Directors, submitted the following motion, of which notice was given at last meeting, and a copy of which appeared on the agenda, signed, in terms of Rule 38 of the Standing Orders, by the Mover and ten other Directors:—

> "That the decision arrived at by the Board of Directors on 5th November 1924, that the Annual Show of 1926 be held at Peebles, be rescinded."

The CHAIRMAN said it was unnecessary to remind them that the motion arose through the course which events had taken since their meeting in November. At last meeting of the Board they had before them a letter from Mr H. N. Mitchell, Kingsmeadows, Peebles, withdrawing the offer of Kingsmeadows Park as a site for the Show. This decision must have caused great disappointment to many people in the Peebles district, particularly to members of the County Council, and notably to Mr M. G. Thorburn, who had taken a great interest in promoting the claims of Peebles as a site for the Show and in raising a local fund. He thought it was due to these gentlemen that the Directors should express appreciation of their efforts and their regret that those efforts should have met with disappointment.

The motion was unanimously agreed to.

The CHAIRMAN then said that, in accordance with the remit made at last meeting, he had visited Kelso, along with the Consulting Engineer and the Secretary, in order to make further inquiries as to obtaining a suitable access to the proposed new loading bank and as to accommodation for parking motor-cars. They were met by the Provost of Kelso, the Town Clerk and others interested, and these and other points were fully discussed. So far as access to the railway loading bank was concerned, he did not think that was a matter for the Board to negotiate. The Railway Company had given assurance to the Kelso Committee that suitable railway facilities would be provided, and it necessarily followed that the Company would arrange as to an access. With regard to accommodation for motor-cars they had visited and inspected several fields. While none of those available were so conveniently situated as might be desired, there was no doubt that accommodation could be obtained. The question of hotel accommodation was discussed, but it was obvious that little accommodation would be available in Kelso.

As the Sites Committee had ruled out Berwick-on-Tweed, the question of a suitable site for the Show of 1926 now lay between Kelso and Hawick. With regard to the latter he was afraid the park put at their disposal was not suitable, and there was the further serious question of constructing a bridge over the river for foot traffic.

It was desirable that they should now settle where the Show was to be held. He accordingly moved that the Show be held at Kelso, although in doing so he felt he must mention that it could not be regarded as an absolutely ideal site for the Show.

The Motion was unanimously agreed to.

Entertainment Tax.

The SECRETARY reported that, at a Meeting of Members in Dumfries on 11th March, a recommendation had been made that the Directors consider the advisability of calling a conference of Agricultural Societies with a view to securing certain further exemptions from entertainment tax for Agricultural Shows. A letter had also been received from the Dunblane Agricultural Society making a similar suggestion.

Colonel F. J. CARRUTHERS of Dormont, who had presided at the Dumfries Meeting, pointed out the difficulty and probable futility of asking representatives of all the Agricultural Societies in Scotland to confer. The problem presented itself in many different ways to these different Societies, and all sorts of schemes would be put forward. If the leading Agricultural Societies were to collect and formulate the various problems and views within their district, the Directors might then regard favourably the summoning of a conference of representatives of these larger Societies.

On the motion of Mr HARRY ARMOUR, it was decided to take no action in the matter.

International Institute of Agriculture.

A letter was submitted from the Board of Agriculture for Scotland with regard to a proposal that the International Institute of Agriculture should enter into relations with independent Societies whose object is the development of Agriculture. The Board explained that at present the direct relations of the Institute were confined to Departments of Agriculture in the respective countries which adhered to it. It was now thought desirable that these relations should be extended to non-official bodies of sufficient importance in each country. This step would, in the first place, enable the Institute to obtain information as to the activities and the policy of these bodies directly instead of indirectly, and would, it was hoped, in the second place help to produce among Agriculturists a more active interest in the Institute's work.

The SECRETARY was instructed to reply that the Directors were generally in favour of the proposal that direct relations be established, but that they were not in possession of sufficient information to offer any useful suggestion as to the manner in which effect could best be given to the proposal.

International Dairy Conference.

Mr W. P. GILMOUR, Balmangan, reported that, with Mr M'CAIG, he had attended a Meeting convened by the Board of Agriculture with regard to the proposed International Dairy Congress. That Meeting unanimously agreed that an International Dairy Congress should be held in 1926, and delegates were appointed to attend a Conference in London. Mr Gilmour attended that Conference, when it was found that the National Farmers' Union, the Federation of Dairymen's Associations, and the National Milk Publicity Council thought it impracticable to hold the Congress in 1926. Every endeavour was made to reach an agreement, but without success, and it was eventually decided to adjourn the Conference for three months. He did not think there was now much hope of the proposed Congress being held next year.

It was agreed to continue Mr Gilmour and Mr M'Caig as the Society's representatives in the matter.

Import Duty on Superphosphates.

Colonel F. J. CARRUTHERS moved suspension of the Standing Orders in order to call attention to the attempt being made by the manufacturers of Superphosphates to bring that industry under "The Safeguarding of Industries Act," and so secure the imposition of an import duty.

The suspension of the Standing Orders being agreed to, Colonel Carruthers submitted the following resolution:—

> "That, in the opinion of the Board, an import duty on Superphosphate of Lime would cause serious hardship to the farmers of Scotland, and that any such proposal should be strenuously resisted."

The resolution was seconded by Sir David Wilson, Bart., of Carbeth, and unanimously adopted, and the Secretary was instructed to forward a copy to the President of the Board of Trade and the Secretary for Scotland.

Fertilisers and Feeding Stuffs Bill.

A communication was submitted from the Secretary of the Fertilisers and Feeding Stuffs Advisory Committee, forwarding copies of the proposed schedules to the Bill, together with an explanatory Memorandum, and inviting the Society's views thereanent.

After hearing a statement by Sir DAVID WILSON, Bart., a discussion followed, and the Secretary was instructed to forward the following observations to the Secretary of the Advisory Committee, and transmit a copy thereof to Dr J. F. Tocher.

First Schedule—Part I. "*Basic Slag.—Amount of Phosphates. Amount of the article that will pass through a prescribed sieve.*"

With regard to the citric method of testing availability of phosphates, the Directors were of opinion that, carried out as directed, it afforded some guidance in the selection of slag, and that until a better method of determining availability was discovered no change should be made.

"*Phosphates, soluble phosphates, and insoluble phosphates are to be stated in terms of phosphoric anhydride* (P_2O_5)."

The Directors were inclined to think that the change suggested would cause considerable confusion amongst practical farmers. The fact that the method of statement suggested by the Committee was the usual one adopted on the Continent was not regarded as a sufficient reason for the change.

MEETING OF DIRECTORS, 6TH MAY 1925.

Mr J. T. M'LAREN, The Leuchold, Dalmeny, in the Chair.

Present.—President—The Lord Blythswood, K.C.V.O. *Ordinary Directors*—Mr Harry Armour; Colonel F. J. Carruthers; Mr Thomas Elder; The Earl of Elgin and Kincardine, C.M.G.; Mr Thomas Elliot; Mr James Gray; Lieut.-Colonel W. T. R. Houldsworth; Mr J. Ernest Kerr; Mr Duncan M'Laren; Mr Robert Macmillan; Mr Alexander Murdoch; Dr Thomas G. Nasmyth; Mr William S. Niven; Mr James Rodger; Major R. W. Sharpe; Mr G. Bertram Shields; Mr A. A. Hagart Speirs; Major Mark Sprot; Mr John Stewart; Mr Falconer L. Wallace. *Extraordinary Directors*—Mr W. P. Gilmour; Mr James Grieve; Mr James R. Lumsden; Mr James M'Laren; Mr J. T. M'Laren; Mr R. G. Murray: Mr Duncan M. Wallace. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Auditor*—Mr William Home Cook, C.A. *Chemist*—Dr J. F. Tocher. *Consulting Engineer*—Professor R. Stanfield.

Glasgow Show, 1925.

Proposed Stack Drying Demonstration.—A Minute of Meeting of Implements Committee, dated 6th May, was read and approved.

The Minute recommended that a free space, 30 feet by 50 feet, be granted to Messrs Telford, Grier, & Mackay, Ltd., Glasgow, for the purpose of providing a Demonstration of Stack Drying on the Wednesday, Thursday, and Friday.

Rule 106—*Maximum Space.*—The SECRETARY stated that the maximum space allowed to Exhibitors was 40 feet of frontage in the Motion Yard, and 100 feet of frontage in the other sections. This year, one or two firms had expressed a desire to have some extra space in excess of the maximum. As the Showyard on this occasion was ample in extent, it occurred to him that the Board might make an exception to the Rule. In order to ascertain what excess was likely to be required, he had written to all Exhibitors who had entered for the maximum space, asking them whether they desired more, as he proposed to bring the matter before the Board. Most of these Exhibitors had replied that they had sufficient space, but six firms had asked for an extension of from 10 feet to 20 feet each.

Mr **Duncan M. Wallace** moved that the six Exhibitors referred to be granted the extra space applied for, and further, that the Secretary communicate with other Exhibitors who had not taken the maximum space, in order that they might also have an opportunity of reconsidering their requirements.

The Motion was seconded by Major **R. W. Sharpe**.

Mr **Harry Armour** moved as an Amendment that the six firms referred to be granted the extra space applied for, and that the Secretary do not communicate with Exhibitors who had not applied for the full space allowed.

The Amendment was seconded by Mr **W. P. Gilmour**.

After discussion a vote was taken, when 17 voted for the Amendment, and 10 for the Motion. The Amendment was accordingly declared carried.

Scottish Savings Committee.—It was agreed to grant the Scottish Savings Committee a free stand, similar to that granted at Perth last year.

Local Committee.—The **Secretary** reported that, at a Meeting of the Local Committee at Glasgow on 15th April, additional Attending Members had been appointed on the various Classes of Stock.

Education.

Forestry Examinations.—A Minute of Meeting of Education Committee, dated 6th May, was read and approved.

The Minute recommended that the Syllabus of the Examination for the Society's First and Second Class Certificates in Forestry, as revised by the Forestry Committee, be approved, subject to some further adjustment of the part relating to Forest Botany and Forest Zoology.

Science.

A Minute of Meeting of Science Committee, dated 6th May, was read and approved.

The Minute dealt with the following matters :—

Arsenical Sheep Dips.—The Committee had considered various communications with regard to the recent Order in Council placing Arsenical Sheep Dips under Part I. of the Schedule to the Pharmacy Act of 1908. After careful consideration, the Committee recommended the Board of Directors to pass a Resolution in the following terms :—

> "The Directors of the Highland and Agricultural Society, having considered the Order in Council, dated 25th February 1925, amending the Schedule to the Poisons and Pharmacy Act of 1908, are of opinion that the inclusion of Arsenical Sheep Dips in the first part of the Schedule will impose vexatious restrictions on the use of such preparations, in view of the fact that all farmers, irrespective of their distance from the source of supply, are required to sign the Poison Register in purchasing arsenical preparations."

The Committee further recommended that, should any joint deputation on the subject be arranged, the Society be represented thereon by Mr Robert Macmillan and Mr Duncan M'Laren.

Animal Breeding.—A letter had been considered from the Royal Agricultural Society of England, forwarding copy of a letter from Dr Crew of the Animal Breeding Research Department, Edinburgh, making application to the Royal Society for a grant towards experimental work he proposed to undertake in the breeding of pigs. The Royal Society inquired if this Society was prepared to express an opinion upon the scheme outlined in Dr Crew's letter, and, if the opinion were favourable, if the Society would be prepared to undertake part of the cost involved. The Committee recommended that a reply be sent to the Royal Society to the effect that this Society had already given a Capital Grant of £500 to the Animal Breeding Research Department, and that the Society did not see its way to give a grant towards the research now proposed.

Price of a Feeding Stuff.—Several letters had been considered from Members of the Society with regard to the exorbitant price charged for a proprietary feeding stuff. Along with these letters was submitted a copy of a completed Order Form for the material, containing the conditions of sale and the price, and which form had apparently been signed by the purchaser. A Report was also considered by Dr Tocher, showing the results of analysis of the feeding stuff, and comparing these with two well-known feeding stuffs of practically the same composition. The Committee had agreed to report to the Directors that they were of opinion that a reply should be sent to these correspondents, pointing out that, as the document ordering the material was signed by the purchaser, they found difficulty in advising the purchaser as to his remedy in the matter.

Analyses for Members.—It was recommended that the following Committee be appointed to consider as to the extent to which the privileges of analyses of fertilisers and feeding stuffs, and other articles, be granted at reduced rates to Members—Sir David Wilson, Bart.; Mr Harry Armour; Mr John Stewart; Mr Falconer L. Wallace; and Dr J. F. Tocher.

Proposed International Dairy Congress.

The Secretary reported that the Board of Agriculture had forwarded a summarised Report of the Proceedings at the Meeting of the General Committee held at Middlesex Guildhall on 24th March 1925, together with a Memorandum outlining the steps which were taken preceding that Meeting to ascertain the wishes of the industry with regard to the suggested Congress. The question of holding an International Dairy Congress at a future date was still open, and the views of the Society were invited as to the desirability of holding the Congress in 1927, or later. It was decided that the Board be informed that the Directors were in favour of the proposed Congress being proceeded with in 1927.

MEETING OF DIRECTORS, 3rd JUNE 1925.

Mr J. T. M'Laren, The Leuchold, Dalmeny, in the Chair.

Present.—*Ordinary Directors*—Mr Harry Armour; Colonel F. J. Carruthers; The Earl of Elgin and Kincardine, C.M.G.; Mr John Elliot; Mr William Elliot; Mr Alexander Forbes; Mr James Gray; Mr J. Ernest Kerr; Mr William Low; Mr John M'Caig; Mr Duncan M'Laren; Mr Robert Macmillan; Mr Alexander Murdoch; Mr William S. Niven; Major R. W. Sharpe; Mr G. Bertram Shields; Mr John P. Sleigh; Mr A. A. Hagart Speirs; Major Mark Sprot; Mr John Stewart; Mr Falconer L. Wallace. *Extraordinary Directors*—Mr Thomas A. Buttar; Mr James Durno; Mr James Gardner; Mr W. P. Gilmour; Mr James Grieve; Mr James R. Lumsden; Mr James M'Laren; Mr J. T. M'Laren; Mr James M'Queen; Mr A. W. Montgomerie; Mr R. G. Murray; Sir Thomas Paxton, Bart., LL.D.; Mr John Speir. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Auditor*—Mr William Home Cook, C.A. *Chemist*—Dr J. F. Tocher. *Consulting Engineer*—Professor R. Stanfield.

The Late Edward M. Cowie, Chief Clerk.

The Chairman said it was his painful duty to announce the untimely and tragic death of the Chief Clerk to the Society, Mr Edward Mowat Cowie. As the result of a motor car accident on Saturday last, Mr Cowie sustained severe injuries, from which he succumbed in the Royal Infirmary on Sunday morning without regaining consciousness. Mr Cowie had been in the Society's employment for thirty-three years, and, since the retirement of the late Mr John Macdiarmid, had occupied with great efficiency the responsible position of Chief Clerk. He submitted the following Resolution of regret and sympathy, which was unanimously adopted, the members present upstanding:—

> "That the Directors record in the Minutes an expression of the very deep regret with which they learned of the tragic death of Mr Edward M. Cowie, Chief Clerk to the Society. Mr Cowie joined the staff of the Society in May 1892 as Second Clerk, and was promoted Chief Clerk in 1912. He had, therefore, served the Society for the long period of thirty-three years. By his death the Society has lost a capable, faithful, and painstaking official, and the Directors wish to express their profound sense of loss and their high appreciation of his long and valuable service.
>
> "They offer their respectful sympathy to Mrs Cowie and her family in their sudden bereavement."

The Chairman said it was only fitting that he should ask the Directors to express their sympathy with Mr R. C. Todd, the Second Clerk, who sustained injuries in the same accident, and to express the hope that he would have a speedy and complete recovery.

This was agreed to.

Letters.

The following letters were submitted :—

Scottish Savings Committee.—Thanks for free stand at Glasgow Show.

Board of Agriculture for Scotland.—Particulars of arrangements for *post-mortem* examinations of Poultry.

International Congress of Entomology.—From Dr R. Stewart MacDougall, agreeing to represent the Society at the International Congress of Entomology at Zurich in July.

The Warble Fly.

A letter was read from Dr R. Stewart MacDougall with regard to a proposed joint meeting of farmers, butchers, and hide and leather merchants to focus attention on the harm and loss occasioned by the maggots of the two Warble Flies, and to consider possible methods, short of compulsion, of combating these pests. He suggested that the Directors appoint representatives to attend the Joint Meeting which would be held in late autumn.

The following were appointed to represent the Society at the proposed Meeting: Mr Thomas A. Buttar, Mr Thomas Elder, Mr A. W. Montgomerie, and Mr G. Bertram Shields.

Glasgow Show, 1925.

General Arrangements.—The SECRETARY reported that the entries for the Show at Glasgow were in excess of last year. In the Implement section applications for stands gave a total of over 600 feet more frontage than at Perth. There was a substantial increase in the entries of Cattle and Horses, and there was a large entry for the Horse-Shoeing Competition. The new section for Fur-Bearing Rabbits had attracted 178 entries. The granting of classes for Large White Ulster Pigs had led to an excellent entry, the numbers being the second highest in the Pig section. Unfortunately the classes for Dairy Shorthorns had again to be cancelled on account of insufficient entries.

He had had a good deal of correspondence, mainly from Ayrshire, on the question of stock exhibited at the Royal Show at Chester being allowed to compete at Glasgow. Some exhibitors wished an assurance that there would be no bar to that being done. He had pointed out that it was impossible to give any such assurance, as so much depended on what took place between that date and the date of the Show; but that, so far as could be seen, it was not likely that the Directors of the Society would take any action to debar stock coming from the Royal Show. Any action that might be taken would be taken by the Ministry of Agriculture or by the Local Authorities of the districts concerned. It was hoped, however, that no such action would be found necessary.

Judge of Border Leicester Sheep.—Mr James Wallace, Chapel Hill, Dunrod, Castle Douglas, was appointed a judge of Border Leicester Sheep in place of Mr Thomas Templeton, Sandyknowe, Kelso, who asked to be allowed to withdraw as he had an interest in some of the prospective exhibits.

Steward of Stands.—In view of the fact that Mr James M'Queen found that he would be absent on a visit to America during the period of the Show, it was agreed that Major R. W. Sharpe be appointed principal steward of stands, and that Mr N. H. Constable be appointed assistant steward.

Conservative Club, Glasgow.—A letter was submitted from the Secretary of the Conservative Club, Glasgow, intimating that the privileges of membership of the Club would be extended to Directors of the Society during the week of the Show. The Secretary was instructed to convey to the Conservative Club, Glasgow, the thanks of the Directors for this courtesy.

Transactions.

A Minute of Meeting of Publications Committee, dated 3rd June, was read and approved.

The Minute recommended payments to writers of articles in the current volume of 'Transactions,' amounting to £191, 3s.

Arsenical Sheep Dips.

With reference to the resolution passed at last Meeting, the SECRETARY read a letter from the Ministry of Agriculture and Fisheries which stated that the Ministry was in consultation with the Privy Council with a view to a modification of the provisions of the recent Order in Council with respect to the supply of Arsenical Sheep Dips. It appeared, therefore, that any further action, by deputation or otherwise, would probably be unnecessary.

Proposed Scottish National Milk and Health Association.

A letter was submitted from the Interim Secretary of the Provisional Council of the proposed Scottish National Milk and Health Association, soliciting a contribution towards the expenses of promoting the movement for the establishment of the Association.

On the recommendation of the Finance Committee, it was agreed to instruct the Secretary to reply that the Society was prepared to give a contribution of £100, for the first year, towards the preliminary expenses of promoting the institution of a Scottish National Milk and Health Association. It was understood that such contributions made by Associations would be credited to the respective Associations as advance contributions on the basis of any allocations which might subsequently be made.

New Members.

The SECRETARY reported that there was a list of 372 Candidates for election as Members of the Society at the Half-Yearly General Meeting, to be held that afternoon.

National Diploma in Agriculture.

A joint letter by Sir A. Daniel Hall and Sir Robert Greig, dated 18th May, containing certain criticisms, and putting forward suggestions for alterations in the scope of the Examination for the National Diploma in Agriculture, was submitted. A Memorandum on the same subject, which had been prepared by the Secretary, was also read.

After hearing a statement by Colonel F. J. CARRUTHERS, Convener of the Education Committee, it was unanimously decided that the joint letter be remitted to the Education Committee, with powers to take such action as they should think proper.

MEETING OF DEPUTATION OF DIRECTORS HELD IN SHOWYARD, GLASGOW, 15TH JULY 1925.

Mr J. T. M'LAREN, The Leuchold, Dalmeny House, in the Chair.

Present.—Ordinary Directors—Mr Harry Armour; Colonel F. J. Carruthers; Mr Thomas Elder; The Earl of Elgin and Kincardine, C.M.G.; Mr John Elliot; Mr Thomas Elliot; Mr William Elliot; Mr Alexander Forbes; Mr Peter Grant; Mr James Gray; Lieut.-Colonel W. T. R. Houldsworth; Mr J. Ernest Kerr; Mr William Low; Mr John M'Caig; Mr Robert Macmillan; Dr Thomas G. Nasmyth; Mr Alexander Robertson; Mr James Rodger; Major Robert W. Sharpe; Mr G. Bertram Shields; Mr John P. Sleigh; Major Mark Sprot; Mr John Stewart; Mr Falconer L. Wallace. *Extraordinary Directors*—Mr Thomas A. Buttar; Mr N. H. Constable; Mr James Durno; Mr James Gardner; Mr W. P. Gilmour; Mr James Grieve; Mr James R. Lumsden; Mr James M'Laren; Mr J. T. M'Laren; Mr A. W. Montgomerie; Sir Thomas Paxton, Bart., LL.D.; Mr John Speir; Mr Duncan M. Wallace. *Consulting Engineer*—Professor R. Stanfield.

Protests.

The SECRETARY reported that no Protests had been lodged.

Precepts.

The CHAIRMAN was authorised to sign the Precepts for the Prizes awarded at the Glasgow Show.

Sale by Auction.

A letter was submitted from Messrs Macdonald, Fraser, & Co., Ltd., Live Stock Auctioneers, Perth, explaining that the Exhibitors of Large White Ulster Pigs had desired them to arrange a Sale by Auction of these exhibits on Friday, and desiring permission to hold the Sale in the Showyard.

It was agreed, in the special circumstances, to grant permission, as desired.

Wreath for Cenotaph.

It was unanimously agreed that a wreath be placed by the Society on the Glasgow Cenotaph, as a tribute to the memory of the citizens who fell in the Great War.

It was further agreed to ask the President of the Society, The Lord Blythswood, to place the wreath on the Cenotaph on the following forenoon at 11 A.M.

MEETING OF DIRECTORS, 4TH NOVEMBER 1925.

Mr J. T. M'LAREN, The Leuchold, Dalmeny, and afterwards Colonel F. J. CARRUTHERS of Dormont, Lockerbie, in the Chair.

Present.—Vice-President—Mr M. G. Thorburn of Glenormiston. *Ordinary Directors*—Mr Harry Armour; Colonel F. J. Carruthers; Mr Thomas Elder; The Earl of Elgin and Kincardine, C.M.G.; Mr John Elliot; Mr William Elliot; Mr W. P. Gilmour; Mr Peter Grant; Mr James Gray; Mr William C. Hunter; Mr J. Ernest Kerr; Mr William Low; Mr Duncan M'Laren; Mr James M'Laren; Mr Robert Macmillan; Mr Alexander Murdoch; Dr T. G. Nasmyth; Mr William S. Niven; Mr Alfred H. Reid; Mr James Rodger; Major R. W. Sharpe; Mr G. Bertram Shields; Mr A. A. Hagart Speirs; Mr John Stewart; Mr Falconer L. Wallace. *Extraordinary Directors*—Mr Thomas A. Buttar; Mr Gilbert Davidson; Lieut.-Colonel W. T. R. Houldsworth; Mr A. Thornton Hunter; Mr Hugh M. Leadbetter; Mr James R. Lumsden; Mr J. T. M'Laren; Mr James M'Queen; Mr James Robertson; Mr Alexander Robertson; Mr John P. Sleigh; Major Mark Sprot; Mr J. P. Ross Taylor. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Chemist*—Dr J. F. Tocher. *Consulting Engineer*—Professor R. Stanfield.

Directors Deceased.

The late JOHN M'CAIG OF BELMONT; JAMES GRIEVE, RUMBLETONLAW; ROBERT G. MURRAY OF SPITTAL; and JAMES A. HUNTER, MACHRIEBEG.

Before proceeding with the business of the Meeting, the CHAIRMAN said they met that day under a sense of great loss. To him personally it was a matter of extreme regret that on his last appearance as their Chairman, and at the first Meeting of a new session, he had to intimate the death of no fewer than four colleagues since their last Meeting.

The loss which was uppermost in their minds was that of Mr John M'Caig of Belmont, Stranraer, who died suddenly on Friday last. The loss to that Board and to Agriculture generally was a very severe one. On the previous day he had attended the funeral in Stranraer, as representing the Society, and the large attendance was an eloquent tribute to the esteem and respect in which Mr M'Caig was held in the district where he was best known. For many years he was a valued and active member of that Board. His figure was familiar in their Showyards, and the interest which he took in the work of the Society could not possibly be over-estimated. For twenty-six years he had been a Director, and since 1919 he had been Chief Steward of Horses. He had represented the Society on many deputations and public bodies, and always with credit to himself and in a manner that reflected honour on the Society.

The Chairman then referred to the death of Mr James Grieve, Rumbletonlaw, a valued member of the Board, who had always been active and diligent in the affairs of the Society; Mr Robert G. Murray of Spittal, who had been a member of the Society since 1874, and an outstanding personality with great force of character and powers of organisation; and Mr James A. Hunter, Machriebeg, Kintyre, another old member of the Society, and at his death a Director who took a keen interest in their affairs.

Appropriate resolutions of regret and sympathy were submitted and approved, the members present upstanding, and the SECRETARY was instructed to forward copies to the relatives of the deceased.

Chairman of the Board for 1925-1926.

On the Motion of the CHAIRMAN, Mr J. T. M'Laren, The Leuchold, Dalmeny, seconded by Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B., Colonel F. J. Carruthers of Dormont, Lockerbie, was unanimously elected Chairman of the Board for the ensuing year.

Colonel F. J. CARRUTHERS, on taking the Chair, thanked the Directors for the honour they had done him.

On the Motion of Colonel CARRUTHERS, a cordial vote of thanks was accorded to Mr J. T. M'Laren for his services to the Society as Chairman of the Board of Directors during the past two years.

Mr J. T. M'LAREN suitably acknowledged and thanked the Board and Chairman for the expression of appreciation of his services.

Representatives on Other Bodies.

The following were appointed representatives of the Society on the Boards of the undernoted institutions for the ensuing year—viz.: *Edinburgh and East of Scotland College of Agriculture*—John Stirton, Secretary, Highland and Agricultural Society. *West of Scotland Agricultural College*—Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip. *Aberdeen and North of Scotland College of Agriculture*—Dr J. F. Tocher, 41½ Union Street, Aberdeen. *Royal (Dick) Veterinary College*—Dr Thomas G. Nasmyth, Canaan Lodge, 43 Canaan Lane, Edinburgh. *Glasgow Veterinary College*—James R. Lumsden of Arden, Dumbartonshire. *Scottish Milk Records Association*—W. P. Gilmour, Balmangan, Kirkcudbright; Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B.; Alexander Murdoch, East Hallside, Hallside, Lanarkshire. *Standing Committee of Management of Scottish Plant Registration Station*—Sir David Wilson, Bart.; James Elder, Athelstaneford Mains, Drem; G. Bertram Shields, Dolphingstone, Tranent—for five years from 1st January 1926.

Vacancies on Board.

It was remitted to the three ordinary Directors for the Dumfries Show Division to bring forward, at next Meeting, the name of a Director to fill the place of the late Mr John M'Caig of Belmont.

It was agreed that Mr J. R. C. Smith of Mowhaugh, Kelso, be nominated as an Extraordinary Director, to fill the vacancy caused by the death of Mr James Grieve, Rumbletonlaw.

Letters.

The following letters were submitted:—

Highland Reel and Strathspey Society.—Thanks for use of Society's Hall.

Scottish Savings Committee.—Thanks for free stand at Glasgow Show.

Glasgow Show, 1925.

Accounts.—The Finance Committee reported that a Summary of the Accounts of the Glasgow Show had been submitted, showing a probable credit balance of about £4128.

The SECRETARY stated that this was the largest credit balance on any Show in the history of the Society. He pointed out, however, that, in accordance with the usual practice, nothing was charged in the Show accounts against establishment and administrative expenses. If the Shows were debited with their share of these permanent charges, and the accounts considered as affecting a complete circuit of Shows, the profit to the Society, if any, would be small.

The CHAIRMAN said he thought the Board should congratulate the Secretary and his Staff on the successful outcome of the Show. He also suggested that they express their thanks to Sir Thomas Paxton, Bart., Convener of the Local Committee, and to their colleagues Mr John Speir and Mr Alexander Murdoch for all their efforts to promote the success of the Show. This was unanimously agreed to.

Glasgow Champion Challenge Cup.—Mr Alexander Murdoch formally handed over to the Society the Glasgow Champion Challenge Cup for best horse in single harness, which had been subscribed for by persons interested in Hackney horses. The Chairman, in accepting the Cup on behalf of the Society, expressed the thanks of the Directors to the donors.

List of Awards.—The List of Awards at the Glasgow Show was laid on the table.

Kelso Show, 1926.

Date of Show.—The CHAIRMAN said they were faced with unusual difficulties in connection with the date of the Show. The Royal Show at Reading was again to be held a week later than usual—viz., on 6th to 10th July. The preceding week had been found unsuitable, as it was the week of the Henley Regatta. In the week following the Royal, there was the Northumberland Show, and the week after that was taken up by the Yorkshire Show at Harrogate. In view of these circumstances, the Shows Committee had decided to recommend that the date of the Kelso Show be fixed for the week preceding the Royal Show—viz., 29th, 30th June, 1st and 2nd July. This was unanimously agreed to.

Forage.—The following Committee was appointed to make arrangements for supply of Forage, and report to the Board: Mr James M'Laren (*Convener*), Mr John Elliot, Mr Alexander Forbes, Mr W. P. Gilmour, Mr D. S. Hutcheson, Mr Duncan M'Laren, Mr Alexander Murdoch, Mr James Roberton, Mr Alexander Robertson, Mr John Speir, and Mr George Will.

Hotel Accommodation and Catering in Showyard.—It was remitted to the Chairman of the Board, the Chairman of the Shows Committee, the Convener of the Local Committee, the Steward of Catering, and the Secretary to make the necessary arrangements.

Show Contracts.—It was remitted to the following Special Committee, with powers, to arrange the contract for timber, and other contracts in connection with the Showyard: Mr John Elliot (*Convener*), Mr T. A. Buttar, Colonel F. J. Carruthers, Mr James R. Lumsden, Mr James M'Laren, Mr W. S. Niven, Mr John Speir, Sir Hugh Shaw Stewart, Bart., Mr John Stewart. Mr George Will, Professor Stanfield.

Forestry Exhibition.—It was agreed that the usual space be granted to the Royal Scottish Arboricultural Society for an exhibition of timber, and also a grant of £40 to be awarded in prizes for timber.

Free Stand.—It was agreed to grant the Edinburgh and East of Scotland College of Agriculture a free stand, with 130 feet frontage, at the Show.

Prize List and Regulations.—The SECRETARY stated that the Shows Committee had met on 3rd November, and had revised the Premium List and Regulations for the Kelso Show.

It was proposed that, as usual, their report be printed and issued for consideration in detail at next Meeting of the Board.

The Board approved of this course.

Special Prizes.—The following Special Prizes were accepted, and votes of thanks accorded to the donors:—

(1) *Aberdeen-Angus Cattle Society*—Champion Gold Medal, value £10, for the best animal in the breeding classes—breeding animals shown as "Extra Stock" being eligible to compete.

(2) *Galloway Cattle Society*—Dr Gillespie Memorial Challenge Trophy, on the same conditions as formerly.

(3) *Red Poll Cattle Society*—£25 towards the prizes in the Red Poll Classes.

(4) *The Clydesdale Horse Society*—(*a*) Cawdor Challenge Cup for the best Clydesdale Stallion or Entire Colt, on conditions laid down by that Society; (*b*) Cawdor Challenge Cup for the best Clydesdale Mare or Filly, on the same conditions as formerly.

(5) *The National Pony Society and Highland Pony Society*—Two Special Prizes of £10 each for the best Highland and best Western Island Ponies, on same conditions as at Glasgow.

(6) *R. W. R. Mackenzie of Earlshall*—Silver Cup for best Shetland Pony of either sex and any age, drawn from ordinary Classes, *and shown in saddle.*

(7) *Cheviot Sheep Society*—Perpetual Challenge Cup, value £25, gifted by Mr J. Borthwick, for best sheep in the Cheviot Classes.

(8) *Society of Border Leicester Sheep Breeders*—Two Gold Medals for best Male and Best Female of the breed exhibited in the ordinary Classes—animals entered as "Extra Stock" not eligible.

(9) *Suffolk Sheep Society*—£25 in prizes as follows: Suffolk Ram Lamb, £10; three Suffolk Ewe lambs, £8, £5, and £2, as at Glasgow.

(10) *Large Black Pig Society*—(*a*) £25 towards the prizes in the Large Black Pig Classes; (*b*) Silver Medal for best Large Black Boar; and Silver Medal for the best Large Black Sow.

(11) *Cumberland Pig-Breeders' Association*—£20 towards the prizes in the Cumberland Pig Classes.

(12) *British Friesian Cattle Society*—£54 towards the prizes in the British Friesian Classes, together with two Champion Prizes of £5 each for the best Male and for the best Female exhibited.

Edinburgh Show, 1927.

A Minute of Meeting of Sites Committee, dated 16th September, was submitted. The Minute stated that a letter had been received from the Town Clerk of Edinburgh, dated 3rd August, in which it was stated that the Town Council had resolved, by a majority, to grant the use of the East and West Meadows for the purpose of holding the Show in 1927, on conditions similar to those applicable in 1919, and with a recommendation that the Society provide alternative ground for use by the cricketers during the season 1927. On the instructions of the Committee, the Secretary had replied that they were entirely in sympathy with the recommendation that the Society provide alternative ground for use by the cricketers, and were prepared to meet the Parks Committee of the Town Council with a view to discussing the steps to be taken.

Mr J. T. M'Laren, Convener, in moving adoption of the Minute, said that the finding of a suitable place for cricket was not an absolute condition of the grant, but a recommendation. The Committee would do their best to meet the Town Council in the matter. The Council had now decided to apply to Parliament for a Provisional Order, giving them powers to grant the use of the Meadows for such purposes as the holding of the Show, so that no question of interdict might arise. They were indebted to Dr Nasmyth for the valuable help he had given in the negotiations with the Town Council.

The Minute was thereafter approved, and the remit to the Committee was continued.

Regulations Relating to Sheep Scab.

A letter was submitted from the Ministry of Agriculture and Fisheries, dated 10th August, with accompanying Draft Copy of the Sheep Scab (General Double Dipping) Order of 1925, and Explanatory Memorandum. The Ministry desired to be informed whether the Society concurred in the adoption of the proposed Order.

Mr John Elliot, Balnakiel, Galashiels, moved that the Directors do not concur in the adoption of the proposed Order. He thought that general compulsory double dipping, accompanied by movement restrictions, between 15th July and 31st August each year, was not only impracticable in Scotland, but would entail serious injury to the sheep trade of the country.

Mr Robert Macmillan of Holm of Dalquhairn seconded.

Mr Falconer L. Wallace of Candacraig and Balcairn moved as an amendment that the Board approve of the proposed Order, and this was seconded by Mr William Low of Balmakewan.

On a vote being taken, only three voted for the amendment, and Mr Elliot's Motion was accordingly declared carried by a large majority.

Restrictions on Exportation of Scottish Pedigree Stock.

Mr T. A. Buttar, Corston, directed attention to the Regulations whereby Pedigree Stock from Scotland are not admitted to Canada and other British Dominions. He pointed out that whilst no case of Foot-and-Mouth Disease had occurred in Scotland since June 1924, the Canadian Government continued to refuse to admit Scottish Pedigree Stock. This refusal was doubtless based on the occurrence of cases of Foot-and-Mouth Disease in England, but he thought that in this connection Scotland should be treated as a separate country. There could be no possible danger of infection being carried by Scottish Stock shipped from a Scottish port. He moved that representations on the subject be made to the High Commissioners for Canada, Australia, New Zealand, and the Irish Free State.

Sir Hugh Shaw Stewart, Bart., seconded, and the Motion was unanimously agreed to.

It was remitted to the Chairman, Mr T. A. Buttar, Mr J. T. M'Laren, and the Secretary to draw up the suggested representation.

Communications from the Board of Agriculture for Scotland.

The following communications from the Board of Agriculture for Scotland were submitted.

Proposed International Dairy Congress.—Intimation that the question of holding a Congress will now be gone into afresh, at the instance of the British Dairy Farmers' Association, and that the Nucleus Organising Committee had been disbanded.

Model Dairy Bye-Laws.—On 28th July the Board forwarded copies of the Draft Model Dairy Bye-Laws, which the Scottish Board of Health proposed to issue for the guidance of Local Authorities, and requested the Society to furnish any observations it had to offer on these Bye-Laws within a fortnight from that date. After consultation with the Chairman of Directors and other members of the Board, the Secretary had written in reply that the Society could not submit observations within the time specified.

Exchange of British and Danish Agriculturists.—On 5th June the Board of Agriculture wrote giving particulars of a scheme for the exchange, for short periods varying from three to six months, of British and Danish Agriculturists. The Board desired to know whether the Society was prepared to co-operate with them in the matter, and, if so, to furnish a list of names and addresses of farmers who were prepared to accept Danish students on the terms laid down. The Secretary had written in reply that the Society found it increasingly difficult to get farmers to take such students, and had no list of farmers willing to take pupils. The only way to get in touch with such farmers was by advertisement, and it appeared that this could be done as effectively by the Board direct as through the agency of a voluntary body, such as this Society. The terms of the Secretary's reply were approved.

Seed-Testing Station.—Memorandum regarding the Testing of Seeds at the official Seed-Testing Station, and sending a revised scale of fees.

Wool-Breeding Council for Great Britain.—At the invitation of the Board of Agriculture for Scotland, it was agreed to nominate Mr J. P. Ross Taylor, Mungoswalls, Duns, as the Society's representative on the proposed Wool-Breeding Council for Great Britain.

Importation of Pedigree Animals Act, 1925.

A Minute of Meeting of Shows Committee, dated 3rd November, was submitted and approved.

The Minute dealt with two references to the Society by the Ministry of Agriculture and Fisheries as to recognition, under the provisions of the above-named Act, of the Friesland Herd-Book of South Africa and the Corriedale Sheep Flock-Book of New Zealand.

Finance.

A Minute of Meeting of Finance Committee, dated 21st October, was submitted and approved.

The Minute dealt with the following matters:—

The Late Mr E. M. Cowie.—It was recommended that a sum of £100 per annum be paid to Mrs Cowie during her lifetime, or until she remarries, and that a sum of £50 per annum be paid to her in respect of each of her two children until they respectively attain the age of twenty-five years.

Chief Clerk.—It was recommended that Mr J. G. Yardley, Third Clerk to the Society, be appointed Chief Clerk, at a commencing salary of £350 per annum.

MEETING OF DIRECTORS, 2ND DECEMBER 1925.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, in the Chair.

Present.—*Ordinary Directors*—Mr Harry Armour; Colonel F. J. Carruthers; The Hon. T. G. P. Corbett; Mr John Elliot; Mr William Elliot; Mr Alexander Forbes; Mr W. P. Gilmour; Mr Alexander P. Gordon; Mr Peter Grant; Mr James Gray; Mr Athole S. Hay; Mr William Low; Captain John MacGillivray; Mr Duncan M'Laren; Mr James M'Laren; Mr Robert Macmillan; Mr Alexander Murdoch; Dr T. G. Nasmyth; Mr Alfred H. Reid; Major R. W. Sharpe; Mr

Falconer L. Wallace. *Extraordinary Directors*—Mr Thomas A. Buttar; Mr George W. Constable; Mr Gilbert Davidson; Lieut.-Colonel W. T. R. Houldsworth; Mr David S. Hutcheson; Mr Hugh M. Leadbetter; Mr James R. Lumsden; Mr James M'Queen; Provost Arthur Middlemas; The Master of Polwarth; Mr James Roberton; Mr Alexander Robertson; Mr J. R. C. Smith; Mr John Speir; Major Mark Sprot; Mr J. P. Ross Taylor; Mr George Will. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Auditor*—William Home Cook, C.A. *Chemist*—Dr J. F. Tocher. *Consulting Engineer*—Professor R. Stanfield.

The Late Queen Alexandra.

The CHAIRMAN, before proceeding with the business of the Meeting, said it was only fitting that the Directors of the Society, which was a National Society and one incorporated by Royal Charter, should express their sense of the loss sustained by the country and the Society by the death of Her Majesty Queen Alexandra. No Queen, he said, had been so generally loved by her subjects. Sixty-two years ago her beauty and grace won all hearts, and, although she retained these qualities during her long life, it was her ready kindness and feeling for the sufferings of the poor that appealed most strongly to all the King's subjects. They shared His Majesty's grief, and desired to convey their sympathy to him. The Chairman submitted the following Address of Regret and Sympathy, which was approved, the members meantime upstanding:—

" *Unto the King's most Excellent Majesty,*

" THE LOYAL AND DUTIFUL ADDRESS OF THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

" *May it please Your Majesty,*

" We, your Majesty's most dutiful and loyal subjects, the Highland and Agricultural Society of Scotland, incorporated by Royal Charter, humbly desire to approach your Majesty with an expression of our grief at the lamented death of your honoured and revered Mother, Queen Alexandra, and our heartfelt sympathy with your Majesty, your Royal Consort, and the other members of your Royal House, in your great bereavement and sorrow.

" Sealed with the corporate seal of the Society, and signed, on behalf of the Society, by Lieutenant-Colonel F. J. Carruthers of Dormont, Lockerbie, Chairman of Directors, and John Stirton, Secretary, at a Meeting held this 2nd day of December 1925.

" (*Signed*) F. J. CARRUTHERS.
" (*Signed*) JOHN STIRTON."

Letters.

Letters of thanks for Resolutions of Sympathy were submitted from:—

Mrs M'Caig and family, Belmont, Stranraer.
Mrs Grieve, Rumbletonlaw, Greenlaw.
Mrs Murray and family, Spittal, Biggar.
Mrs Hunter and family, Machriebeg, Campbeltown.

International Dairy Congress.

A letter was submitted from the British Dairy Farmers' Association forwarding copy of a resolution passed at a Meeting held on 16th November. At that Meeting it was decided to proceed with the organisation of an International Dairy Congress in Great Britain in 1928, the proceedings of which should be confined to an exposition of the resources of the Dairy Industry in this country.

The Society was invited to nominate a delegate to attend a further Meeting to be held on 11th December. It was unanimously agreed to nominate Mr W. P. Gilmour, Balmangan, Kirkcudbright, as the Society's representative, with Lieut.-Colonel W. T. R. Houldsworth of Kirkbride as reserve in the event of Mr Gilmour being unable to attend.

Vacancy on Board.

On behalf of the Ordinary Directors in the Dumfries Show Division, Mr W. P. GILMOUR moved, and Mr R. MACMILLAN seconded, that Mr James M'Clean, Craigmount, Portpatrick, be nominated as an Ordinary Director, to fill the vacancy caused by the death of the late Mr John M'Caig. This was unanimously agreed to.

Kelso Show.

Prize List.—The Report of the Shows Committee of 3rd November, which had been printed and circulated, was submitted and considered in detail.

The following were the principal matters dealt with :—

Renfrewshire Perpetual Gold Challenge Cup.—The Report recommended that this Cup be offered for the best group of Half-Bred Sheep. On the motion of Major R. W. Sharpe, it was agreed that the Cup be offered for the best Half-Bred Ewe or Gimmer.

Hunters.—On the recommendation of a Sub-Committee, it was agreed that thirteen classes be provided, with a total prize money of £302. It was understood that part of this sum would be raised locally.

Children's Riding Ponies.—On the recommendation of the same Sub-Committee, it was agreed that two classes be provided, as at Glasgow.

Harness Classes.—In accordance with a remit, Mr ALEXANDER MURDOCH suggested that there be three Open Classes for Horses in Harness, with a total prize money of £78, and this was agreed to.

Times of Judging.—On the motion of the CHAIRMAN, it was agreed to remit to the Stewards to fix times for judging of Hunters and Harness Horses, &c.

Shepherds' Packs.—It was remitted to the following Sub-Committee to consider detailed arrangements for the Competition for Shepherds' Pack Sheep, and report: Mr Robert Macmillan (*Convener*), Colonel F. J. Carruthers, Mr John Elliot, Mr Athole S. Hay, Mr Duncan M'Laren, Major R. W. Sharpe, and Mr J. R. C. Smith.

Goats.—It was decided, in view of the small entry in recent years, to delete the Milking Competition Class.

Large White Ulster Pigs.—In view of a request from the Breed Society, together with an offer of £20 towards the prize fund, it was agreed that these Classes be continued as at Glasgow.

Poultry.—It was agreed to defer a decision with regard to Poultry Classes until a report was received from the Special Committee appointed to meet a delegation from the Poultry Exhibitors.

Rabbits.—On the suggestion of Mr ROBERT MACMILLAN, it was agreed that the date for closing of entries for Rabbits be 27th May.

With these emendations the Report of the Shows Committee was adopted.

Convener of Local Committee.—On the Motion of Mr JAMES ROBERTON, seconded by Mr HUGH M. LEADBETTER, Mr Athole S. Hay of Marlefield, Roxburgh, was unanimously appointed Convener of the Local Committee of Management.

Appointment of Judges.—The SECRETARY reported that, at a Meeting of the Board in Committee, on 1st December, Judges had been appointed for the various Classes of Stock. These were being communicated with, and, after replies were received, the List of Judges would be published in the Press.

Special Prizes.—The following Special Prizes were accepted, and votes of thanks accorded to the donors :—

(1) *The President*—(*a*) Champion Medals for each section of Live Stock; (*b*) Four Gold Medals to be awarded to the best animal of each breed in the Shepherds' Pack Classes.

(2) *Shorthorn Society*—Two Champion Prizes of £20 each, with Silver Medals to the Breeders, for the best Male and best Female Shorthorn.

(3) *Scottish Shorthorn Breeders' Associations*—£20, to be awarded in prizes of £10, £5, £3, and £2, for Shorthorn Heifers calved on or after 1st April 1925.

(4) *Ayrshire Cattle Herd-Book Society*—
  (*a*) £20 to provide two prizes of £10 each for the best Male and Female respectively of the Ayrshire Breed, entered with a number in the Herd-Book not later than 1st June 1926.
  (*b*) Cowhill Champion Cup, approximate value £30, for best animal of the Ayrshire Breed, entered with a number in the Herd-Book.

(5) *The Hunters' Improvement, &c., Society*—Champion Gold Medal for the best Hunter Filly (not exceeding 3 years old), on same conditions as at Glasgow.

(6) *The Shetland Pony Stud-Book Society*—Silver Medal for the best Shetland Pony, on the same conditions as formerly.

(7) *Oxford Down Sheep-Breeders' Association*—
  (1) £21 towards the prizes in the Oxford Down Sheep Classes.
  (2) Scottish Oxford Down Sheep-Breeders' Challenge Cup, value £50, for the best Oxford Down animal bred in Scotland, on same conditions as formerly.

(8) *National Pig-Breeders' Association*—(*a*) Gold Medal for the best Large White Boar, and Gold Medal for the best Large White Sow; (*b*) Gold

Medal for the best Middle White Boar, and Gold Medal for the best Middle White Sow; (c) £6 towards the prizes for Middle White Pigs.

(9) *Large White Ulster Pig Society*—£20 towards the prizes for Large White Ulster Pigs.

Science.

A Minute of Meeting of Science Committee, dated 2nd December, was read and approved.

The Minute recommended that a note be inserted in the 'Transactions,' following the list of charges for Analyses of Manures, Feeding-Stuffs, Soils, and Agricultural Products, to the following effect:—

> "Not more than four samples per annum will be analysed under the Society's scheme for any one member."

National Diploma in Agriculture.

The following Minute of Meeting of Education Committee, dated 4th November, was submitted:—

"*National Diploma in Agriculture.*

"In accordance with the remit from the Board of Directors on 3rd June, the Committee considered the joint letter from Sir A. Daniel Hall and Sir Robert Greig, dated 18th May 1925. The contents of the letter are briefly summarised in the last sentence thereof, which says:—

> "'We ask the societies to substitute for the present examination, which has become redundant, one that will be post-graduate in character, and will mark the successful candidates as possessing special qualifications in practical agriculture, beyond the standard required for existing degrees and diplomas.'

"This question of completely altering the scope and character of the examination for the National Diploma in Agriculture has repeatedly been before the National Agricultural Examination Board. It was first raised by Sir Daniel Hall in 1920, and has been raised on several occasions since by him and by Sir Robert Greig. It has been the subject of various memoranda, and has also been fully considered by a special Committee of the Examination Board. As a result of these deliberations the Examination Board has consistently refused to take any action on the lines proposed. It is on account of this refusal that Sir Daniel Hall and Sir Robert Greig have now addressed their joint representation to the two Societies concerned.

"The Education Committee is of opinion that the granting of a Diploma of a post-graduate character, such as is suggested in the letter, would not be in accordance with the intentions of the two Societies when the present Diploma was founded; and further, that the granting of such a Diploma is not an object on which the Societies would be warranted in expending their funds. Apart from these considerations, it appears impossible to carry the examination in Practical Agriculture much further than it goes at present.

"The accompanying statement of the number of candidates who have entered for the examination, and the number who have obtained the Diploma since 1900, appears to bear out the view that the present Diploma is serving a useful purpose. The Committee, therefore, is of opinion that the Diploma should continue to be awarded on the present lines.

"With regard to the proposal to alter the date of the examination to suit the session arrangements at the English Agricultural Colleges, the Committee is prepared to consider favourably any such proposal, even although this should involve the holding of two examinations in the year."

The CHAIRMAN, in moving the adoption of the Minute, said they had had circulated amongst them copies of the Minute and relative documents, including copy of a joint letter written by Sir Daniel Hall and Sir Robert Greig regarding the National Diploma in Agriculture. The matter had been left in the hands of the Education Committee, but, as this joint letter was really an appeal to the Board from the decision of the Education Committee, in conjunction with the Committee of the Royal Society, it was thought that the matter should be brought prominently before their notice, and that they should have some idea of the reasons which influenced them in coming to the conclusion that this proposal was not only undesirable but impossible. The main charge against the present Diploma was that it was not only redundant but actually harmful. The Education Committee absolutely disagreed with that view. The figures which had been circulated, he thought, proved that there was a great desire on the part of agricultural students to obtain this Diploma, and that it possessed much greater value than an ordinary College Diploma could possibly have, because it had a national and universal standing. They had never been able to get any satisfactory explanation from Sir Daniel Hall or Sir Robert Greig of the further charge that it was actually doing harm. The only feasible objection was that the date of the examination did not suit the English Colleges. They were perfectly willing, if it could be shown that there was a hardship, that there should be two examinations in the year, and they would bear their share of the extra cost. So far as they could see, that was the only real grievance.

In an interview with the Royal Society's Education Committee, Sir Daniel Hall made a most unwarranted attack on agricultural students. He had said, with regard to the students who got the Diploma, that hybrid men were being turned out. Those students, observed the Chairman, were young. There was only one school in which they could learn all about practical farming operations and the judging of Live Stock. It was the hard, and sometimes very costly, school of experience. Personally, he could not help thinking that if those two distinguished gentlemen had spent a little more time in that school themselves, the Society would not have been troubled so much now by their proposals. The recommendation of the Education Committee was that the granting of a Diploma of a post-graduate character, as was suggested in the letter, would not be in accordance with the intentions of the two Societies when the present Diploma was founded; and further, that the granting of such a Diploma was not an object on which the Societies would be warranted in expending their funds. Apart from these considerations, he said it appeared to be impossible to carry the examination in Practical Agriculture much further than it went at present. The greatest difficulty they were faced with in tightening up the practical part of the examination was the securing of suitable Practical Examiners. It was almost impossible to get a practical farmer as an Examiner, who also had the necessary scientific qualifications. This proposal to have a post-graduate Diploma entirely in Practical Farming was one which appeared to the Committee to be absolutely impossible and unworkable.

The Minute was unanimously approved.

Exportation of Scottish Pedigree Stock.

Letters were read from the High Commissioners for Canada, Australia, New Zealand, and the Irish Free State, in reply to representations made, as agreed upon at last Meeting, with regard to the admission of Pedigree Stock from Scotland into these countries. The High Commissioner for the Irish Free State had agreed to receive a deputation, whilst the others desired that the representations should be submitted in writing.

On the suggestion of Mr T. A. BUTTAR, it was agreed to write to the High Commissioner for Canada, stating that a deputation would be in London on other business, and again asking that the deputation be received.

The members of the deputation were appointed as follows: Mr T. A. Buttar, Mr J. T. M'Laren, and the Secretary.

Grants to Local Societies.

A Report by the Shows Committee, dated 2nd December, relating to Grants to Local Societies, was submitted and approved.

The Committee recommended fourteen districts for grants of £12 each; nineteen districts for three Silver Medals each, £57; eleven districts for grants of £15 each for Stallions; special grants of £15 to the Northern Arts and Crafts Society; £60 for Federations of Women's Rural Institutes; £20 to Kilmarnock Cheese Show; £5 to Shetland; £3 to North Uist; £3 to Rousay, Orkney; £3 to South Ronaldshay and Burray; a Gold Medal and a Silver Medal to the British Dairymaids' Association, £5, 1s.; eleven districts for two Medals each, £22; the usual Medals at Ploughing and Hoeing Competitions, say £99; and one district for two Medals for Cottages and Gardens, 17s.; Long-Service Medals and Certificates, say £92, 10s.—making the total sum offered in 1926, £718, 8s., against £731, 18s. 4d. awarded in 1925.

A further Minute of Meeting of Shows Committee, dated 2nd December, was submitted and approved.

The Minute dealt with the following matters:—

Stack-Judging Competitions in Aberdeenshire.—An application was considered from the North of Scotland College of Agriculture for a grant to provide Medals to be awarded to Farm Servants in connection with the Competitions for a Silver Cup presented by the late Sir John Fleming for the best kept Cornyard in Aberdeenshire. It was agreed that the application be remitted to the following Sub-Committee for consideration and report: Colonel F. J. Carruthers, Mr John Elliot, Mr Alexander Forbes, Mr William Low, Mr Falconer L. Wallace, and Sir David Wilson, Bart.

Ploughing Medals.—On the suggestion of the SECRETARY, it was agreed that an improved type of Ploughing Medal, of which a sketch was submitted, should, in future, be awarded for Ploughing Competitions. The Medal would be executed in silver and enamel, and would cost 10s., as compared with 8s. 6d. for the present Medal.

MEETING OF DIRECTORS, 6TH JANUARY 1926.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, in the Chair.

Present.—President—The Duke of Roxburghe, K.T., M.V.O. *Ordinary Directors*—Mr Harry Armour; Colonel F. J. Carruthers; The Hon. T. G. P. Corbett; Mr Thomas Elder; Mr John Elliot; Mr Thomas Elliot; Mr William Elliot; Mr W. P. Gilmour; Mr Peter Grant; Mr James Gray; Mr Athole S. Hay; Mr William Low; Mr Duncan M'Laren; Mr James M'Laren; Mr Robert Macmillan; Mr Alexander Murdoch; Dr T. G. Nasmyth; Mr William S. Niven; Mr James Rodger; Major R. W. Sharpe; Mr G. Bertram Shields; Mr John Stewart. *Extraordinary Directors*—Mr Thomas A. Buttar; Mr George W. Constable; Mr Gilbert Davidson; Lieut.-Colonel W. T. R. Houldsworth; Mr A. Thornton Hunter; Mr David S. Hutcheson; Mr Hugh M. Leadbetter; Mr James R. Lumsden; Provost Arthur Middlemas; Mr James Roberton; Mr Alexander Robertson; Mr J. R. C. Smith; Mr John Speir; Major Mark Sprot; Mr J. P. Ross Taylor; Mr George Will. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Auditor*—William Home Cook, C.A. *Chemist*—Dr J. F. Tocher. *Consulting Engineer*—Professor R. Stanfield.

The Late Duke of Montrose.

The CHAIRMAN said that since last Meeting the Society had sustained a severe loss through the death of the Duke of Montrose, K.T. His Grace joined the Society in 1876—exactly half a century ago. He occupied the office of President in 1891, 1909, and 1921, and Vice-President in 1881 and 1900. He had a wide and practical knowledge of agriculture, and could express his views with clearness and force. Many of them would remember his speech at the General Meeting in the Showyard at Stirling in 1921, and how well he voiced the opinion of farmers on the agricultural situation. An appropriate resolution of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to send a copy thereof to the Dowager Duchess of Montrose.

The Late Queen Alexandra.

A letter was read from the Secretary for Scotland stating that the loyal and dutiful Address of the Society had been laid before the King, who had commanded him to convey to the Society His Majesty's thanks for this expression of sympathy

Ages of Cattle.

A letter addressed to the Chairman, from Mr JAMES WILSON, Tundergarth Mains, Lockerbie, was read, relative to the ages of cattle exhibited at the Perth Show. He stated that an Exhibitor had two heifers, with six broad teeth up, which were shown as two-year-olds, and which must have been near four years old. In another class, a bull stirk with two broad teeth up got a first prize in a two-year-old class. He suggested that the rules be altered so that all two-year-old cattle showing more than two broad teeth, and one-year-old showing two broad teeth, be disqualified. It was agreed that the letter be remitted to the Shows Committee for consideration and report.

Finance.

A Minute of Meeting of Committee, dated 6th January, was read and approved.

The Minute stated that an Abstract of the Accounts for the year 1924-1925, as prepared by the Society's Auditor, had been submitted and approved, and signed by two members of the Finance Committee and by the Auditor.

Kelso Show, 1926.

Stewards.—The Stewards of the various departments were appointed as follows : *Cattle*—Mr J. Ernest Kerr and Mr W. P. Gilmour ; *Horses*—Mr John P. Sleigh and Mr Hugh M. Leadbetter ; *Sheep, Goats, Pigs, and Wool*—Mr R. Macmillan and Mr Duncan M'Laren ; *Grand Stands*—Mr James M'Queen and Major Robert W. Sharpe ; *Forage*—Mr James M'Laren and Mr John Stewart ; *Gates*—Mr Alexander Forbes and Mr William S. Niven ; *Implements*—Mr G. Bertram Shields and Mr John Speir ; *Poultry*—Mr James R. Lumsden ; *Catering and Honey, &c.*—Major Mark Sprot.

Veterinary Surgeon.—Mr A. B. Tully, V.S., Kelso, was unanimously appointed Veterinary Inspector for the Kelso Show, on the usual conditions.

Rule 32.—The request by the Ayrshire Cattle Herd-Book Society, that Rule 32 be amended so that cows of the Ayrshire Breed shall have had a calf within eighteen months previous to the Show, instead of fifteen months as at present, was further considered, in view of replies now received from the Red Poll Cattle Society and the British Friesian Cattle Society. The Red Poll Cattle Society stated that they would much prefer, so far as the Red Poll Breed was concerned, that the fifteen months' period should remain. The British Friesian Cattle Society stated that they were strongly against the proposed alteration, as they were of opinion that such an alteration was opposed to commercial utility, and that in the case of the British Friesian Breed the alteration was both undesirable and unnecessary. If, however, an extension was made in favour of the Ayrshire, they were of opinion that a similar extension should be made in the case of the British Friesian Breed.

After discussion it was unanimously agreed that no alteration be made.

Poultry Classes.—A Minute of Meeting of Special Committee, dated 5th January, was submitted and approved.

The Minute stated that the Special Committee had met a deputation representing the Poultry Exhibitors, and had arrived at certain recommendations regarding the appointment of judges and alterations in the classes, of which details were given.

Shepherds' Pack Classes.—A Minute of Meeting of Special Committee, dated 6th January, was submitted and approved.

The Minute recommended that sheep entered in these classes be in the Showyard for the full period of the Show ; that they be penned separately and judged on Tuesday after the other sheep classes ; that the entry fee for each exhibit be 5s., and that these sheep do not compete for the President's Champion Medals.

Jumping Competition for Hunters.—On a recommendation by the Special Committee on Hunters, it was decided that no provision be made for a Jumping Competition for Hunters which had been regularly hunted to hounds.

Catering.—On a recommendation of the Catering Committee, it was decided to grant a free site for a catering stand to the Border District Union of the British Women's Temperance Association.

Special Prizes.—The following Special Prizes were accepted and votes of thanks accorded to the donors—

(1) *Board of Agriculture for Scotland.*—£40 towards the prizes in the Highland Pony Classes, and £12 towards prizes for Goats.

(2) *Shetland Ponies.*—Special Prize of £10, by "Four Lovers of the Breed," per Mr W. Mungall of Transy, for the best group consisting of a Male and two Females of any age.

Export of Scottish Pedigree Stock.

Mr T. A. Buttar, Corston, Coupar-Angus, on behalf of the deputation appointed at last Meeting, reported on the results of interviews and negotiations with the High Commissioners for Canada, Australia, and the Irish Free State, in connection with the export of Scottish Pedigree Stock. The deputation had been received by the High Commissioners for Canada and for the Irish Free State, when they had stated their case fully, and had pressed the point that Scotland be treated as a separate unit from England with respect to freedom from Foot-and-Mouth disease. The High Commissioners gave their case a sympathetic hearing, and promised to transmit the views submitted to their respective Governments. The High Commissioner for Australia did not formally receive the deputation, but he (Mr Buttar) had got in touch with the Australian Authorities, with the result that cabled instructions were received from Australia to admit Pedigree Stock from Scotland by direct shipment from Glasgow. The first shipment, comprising a valuable selection of Pedigree Stock, had already sailed from the Clyde by one of the Blue Funnel Line Steamers direct for Australia.

The Chairman congratulated the deputation on the success which had attended their efforts.

Forestry Examinations.

A Minute of Meeting of Education Committee, dated 5th January, was read and approved.

The Minute stated that the revised Syllabus for the Society's First and Second Class Certificates in Forestry had now been finally adjusted, and recommended that it be printed in the Premium Book and 'Transactions' for 1926, together with a note that the new Syllabus will come into operation in 1927.

Agricultural Advisory Committee.

A letter was read from the Board of Agriculture, on behalf of the Secretary for Scotland, inviting the Society to submit a suggestion for filling the vacancy in the Agricultural Advisory Committee of the Council of Agriculture for England, caused by the death of the late Mr John M'Caig.

On the motion of the Chairman, seconded by Mr Robert Macmillan, it was unanimously agreed to suggest to the Secretary for Scotland that Mr W. P. Gilmour, Balmangan, Kirkcudbright, be appointed.

Entertainment Tax.

A letter was submitted from the Secretary of the United East Lothian Agricultural Society, with reference to the fact that entertainment tax continued to be charged on agricultural shows which had any attraction other than an Exhibition of Jumping or a Band, and suggesting that this Society should, in conjunction with the Royal Society and with Local Societies in Scotland and England, again press upon the Government the claims of Agricultural Societies to be exempted from the tax.

After discussion, Mr Thomas Elder of Stevenson moved that the Society take action on the lines indicated, but the Motion was not seconded.

The suggestion of the United East Lothian Agricultural Society was therefore not adopted.

Show of 1928.

Mr William Low of Balmakewan moved—"That provided a suitable site is available, and satisfactory financial and other arrangements can be made, the Society's Show of 1928 be held in the Aberdeen Show Division."

The Motion was unanimously agreed to.

New Members.

The Secretary intimated that there were 273 Candidates for election as Members of the Society at the Anniversary General Meeting to be held that afternoon.

MEETING OF DIRECTORS, 3RD FEBRUARY 1926.

Colonel F. J. Carruthers of Dormont, Lockerbie, in the Chair.

Present.—Vice-President—The Earl of Dalkeith. *Ordinary Directors*—Colonel F. J. Carruthers; Mr Thomas Elder; The Earl of Elgin and Kincardine, C.M.G.; Mr John Elliot; Mr Thomas Elliot; Mr William Elliot; Mr Alexander Forbes; Mr William C. Hunter; Mr William Low; Mr James M'Clean; Mr James M'Laren; Mr Alexander Murdoch; Dr T. G. Nasmyth; Mr William S. Niven; Mr Alfred H. Reid; Mr James Rodger; Major R. W. Sharpe; Mr G. Bertram Shields; Mr A. A. Hagart Spiers. *Extraordinary Directors*—Mr Thomas A. Buttar; Mr George W. Constable; Mr Gilbert Davidson; Mr A. Thornton Hunter; Mr Hugh M. Leadbetter; Mr James R. Lumsden; Mr J. T. M'Laren; Mr James M'Queen; Provost Arthur Middlemas; The Master of Polwarth; Mr James Roberton; Mr Alexander Robertson; Mr John P. Sleigh; Mr J. R. C. Smith; Major Mark Sprot; Mr George Will. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Hon. Secretary*—Sir Hugh Shaw Stewart, Bart., C.B. *Chemist*—Dr J. F. Tocher. *Consulting Engineer*—Professor R. Stanfield.

The Late Mr William Donald.

The CHAIRMAN said that, since last Meeting, the death had occurred of Mr William Donald, Fardalehill, Kilmarnock, who had been a member of the Society for many years, and who had served as a Director from 1919 to 1922. He had taken a great interest in all Agricultural affairs, and he was largely responsible for initiating the National Farmers' Union of Scotland, of which he was the first President. His loss would be felt throughout the whole of Scotland.

The Chairman submitted the terms of a resolution of regret and sympathy, which was adopted, the members present upstanding, and the Secretary was instructed to send a copy thereof to the widow of the deceased.

Letters.

The following letters were submitted :—

The Late Duke of Montrose.—Letter from the Dowager Duchess of Montrose, expressing thanks for Minute of Condolence passed at last Meeting.

Agricultural Advisory Committee.—Letter from the Board of Agriculture for Scotland, intimating that the Secretary for Scotland had nominated Mr W. P. Gilmour, Balmangan, Kirkcudbright, as a member of the Agricultural Advisory Committee for England and Wales, in succession to the late Mr John M'Caig.

Northumberland Agricultural Society.—Letter from the Secretary of the Northumberland Agricultural Society, thanking the Society for the courtesy shown in fixing the date of the Kelso Show so as to leave free the week in which the Northumberland Show falls to be held.

Export of Scottish Pedigree Stock.

A letter was submitted from the Hon. Peter C. Larkin, High Commissioner for Canada, forwarding copy of a letter from the Veterinary Director-General of Canada. This latter communication pointed out that, although no outbreak of Foot-and-Mouth disease had occurred in Scotland since June 1924, the outbreaks had been increasing with alarming rapidity all over England. The fact remained that Scotland had not an embargo against the movement of cattle from England into Scotland, nor did it prohibit the showing of Scottish cattle at the various fairs in England. There was, therefore, always the possibility of outbreaks occurring in Scotland without warning, and, under those conditions, the Department of Agriculture in Canada was not prepared to take the risk of allowing Scottish importations.

Mr T. A. BUTTAR, Corston, expressed regret at the position taken up by the Veterinary Advisers of Canada and the United States. It was practically impossible for Scotland to place an embargo against cattle coming from England. From information he had received, however, he thought there was a probability of the restrictions being modified in the near future, provided no outbreaks occurred in Scotland in the meantime.

Science.

A Minute of Meeting of Committee, dated 3rd February, was submitted and approved.

The Minute dealt with the following matters :—

Schedule of Unit Values.—The Schedule of Unit Prices of Manures and Feeding-Stuffs for the current year had been revised, and it was recommended that it be printed and issued as usual.

Values of Unexhausted Manures and Feeding-Stuffs.—It was recommended that the Table of Values of Unexhausted Manures and Feeding-Stuffs be reissued, and that it be remitted to Dr Tocher, Consulting Chemist, to revise it in terms of the new Unit Values.

Kelso Show, 1926.

A Minute of Meeting of Shows Committee, dated 3rd February, was submitted and approved.

The Minute dealt with the following matters :—

Dexter Cattle.—On an application from Sir Robert Usher, it was agreed that two classes for Dexter Cattle be provided, with a total prize money of £30. Towards this sum, the following offers of contributions were submitted, and these were accepted with thanks—

Sir Robert Usher and Lady Usher, Wells, Hawick	£10
Lady Kinloch of Gilmerton	5
Dexter Cattle Society, London	5
	£20

Poultry Classes.—Judges for the various sections were nominated, and the Secretary was instructed to communicate with these and invite them to act.

Horse-Shoeing.—The classification and Prize List was submitted, provision being made for two classes as formerly—one Open and one for Juniors. Special Prizes were intimated, and the Secretary was instructed to convey thanks to the donors. The names of two Judges, to act along with the Society's Veterinary Inspector, were submitted and approved, and the Secretary was instructed to communicate with them with a view to securing their consent to act.

The following were appointed members of the Committee of Management of the Horse-Shoeing competition: *Highland Society*—Mr John Speir, Mr Gilbert Davidson, and The Master of Polwarth. *Blacksmiths' Association*—Mr William Hume, Bonjedward, Jedburgh; Mr David Welsh, Morebattle, Kelso; and Mr Peter Storie, Stichill, Kelso.

Rural Industries.—The classification and Prize List for the Rural Industries Section was submitted.

The SECRETARY submitted a list of suggested Judges, and it was agreed to recommend that he be instructed to approach the persons named, with a view to ascertaining if they would be willing to act.

Rabbits.—It was agreed to recommend that Mrs Chevasse, 36 High Street, Sutton Coldfield, be appointed Judge of Fur-Producing Rabbits.

Stand Rents.—On an application from the Scottish Agricultural Implement Dealers' Association, it was agreed to recommend that the scale of charges for stands be reduced to the following:—

	Members.	Non-Members.
1. Open ground, without Shedding, per 10 ft.	£1 10 0	£2 5 0
2. Special open ground, without Shedding, per 10 ft.	2 10 0	3 5 0
3. Ordinary Shedding, per 10 ft.	1 10 0	2 5 0
4. Special Shedding, per 10 ft.	2 10 0	3 5 0
7. Motion Yard, without Shedding, per 10 ft.	3 0 0	4 15 0
8. Motion Yard, with Shedding, per 10 ft.	4 10 0	6 0 0

Ages of Cattle.—In connection with the remit from the Board at last Meeting, Colonel F. J. Carruthers submitted a statement with regard to dentition of cattle, showing the variations in the times at which the various broad teeth appear. This statement was corroborated by a Memorandum from Principal O. Charnock Bradley of the Royal (Dick) Veterinary College. It was recommended that no further action be taken in the matter.

Timber for Showyard.—A Minute of Meeting of Show Contracts Committee, dated 3rd February, was read and approved.

The Minute stated that three Tenders for the hire of Timber had been received. The lowest Tender was from Messrs George Gordon & Co., Ltd., Aberdeen, the amount being £2030, and it was decided that this Tender be accepted.

Special Prizes.—The following Special Prizes were accepted, and votes of thanks accorded to the donors—

(1) *The Dun and Belted Galloway Cattle-Breeders' Association.*—£20 towards the prize money in the Belted Galloway Classes.

(2) *The Duke of Buccleuch's Hunt.*—Fifty Guineas towards the Prize Fund for Hunter Classes.

Proposed Sheep (General Double Dipping) Order, 1925.

A letter was read from the Scottish Chamber of Agriculture, inviting the Society to appoint three representatives to attend a proposed Conference, on 17th February, with a view to arriving at a definite policy with reference to the proposed Sheep (General Double Dipping) Order, 1925.

It was agreed that the following gentlemen be asked to represent the Society at the proposed Conference: Mr Gilbert Davidson, Mr James M'Laren, and Mr James M'Queen.

Argyll Naval Fund.

A Minute of Meeting of Committee, dated 2nd February, was submitted and approved.

The Minute recommended that the following appointment be made to the list of beneficiaries: Malcolm Wallace Graham Webster.

A letter was submitted from the Right Hon. Sir John Gilmour of Montrave, Bart., Secretary for Scotland, desiring to be relieved of the Convenership of the Committee in view of his inability to attend the meetings. It was unanimously recommended that Maclachlan of Maclachlan, Castle Lachlan, Strachur, be appointed Convener.

Show of 1927.

Dr T. G. Nasmyth explained that difficulties had arisen with regard to the granting of the Meadows as a site for the Edinburgh Show of 1927. The Town Council proposed to insert a clause in a Provisional Order, which they were at present promoting, giving the Council power to grant the use of the Meadows for such purposes as an Agricultural Show. The intention of this provision was to prevent the possibility of an action for interdict being raised against the Society in the event of the Show being held. Considerable opposition had arisen in connection with the insertion of this clause, and it now appeared that the prospects of the clause receiving the sanction of Parliament were remote. It might be that the Council would decide to drop the clause altogether, rather than endanger the whole Provisional Order.

A full discussion on the subject followed, in the course of which it was made clear that, in the event of the clause being dropped, the Society could not take the risk of proceeding with the Show in the Meadows, as an action for interdict was practically certain to follow.

It was eventually decided that the following Statement of the Society's position with regard to the whole matter be communicated to the Town Council and also to the Press:—

The 1927 *Show and the Meadows.*

"The Directors note with grave concern the increasing opposition to the proposal of the Town Council of Edinburgh to grant the use of the Meadows as a site for the Society's Show of 1927 They much regret that such opposition should have arisen, more especially as they are convinced that it is based on a misapprehension of the facts. These facts, they are aware, have, in several cases, been entirely misrepresented.

"Nothing could be more misleading than the exaggerated statements which have appeared as to the period during which the public will be excluded from the Meadows. The Society's representatives have repeatedly given an assurance to the Parks Committee of the Town Council that this period will not exceed ten days. It will indeed be less, as the practice is to allow members of the public free access to the Showground at all times excepting during the four days of the Show.

"From the commencement of preparations until the final clearing and restoration of the ground will occupy a period of from four to four and a half months, but during much of that time the use of the ground by children and the public generally will not be seriously curtailed. The Society has also undertaken that for two months from the commencement of operations the principal cricket pitches will be kept clear for play, and the more important of these will be completely fenced or otherwise protected from damage during the whole period of occupation. The erections adjoining these pitches will be removed with all expedition after the Show, so that play may be resumed before the whole work of dismantling has been completed. This arrangement, together with the Society's willingness to contribute to the cost of providing alternative pitches in other parts of the city, appears to leave little real ground of complaint on the part of the cricketers.

"As already mentioned the use of the Meadows by children and the public generally—apart from organised games—will be interfered with to a very limited extent. Indeed, it is not too much to say that during the greater part of the period these persons will be less subject to interference, and certainly less liable to danger than they are when the ground is being used for cricket.

"Reference has been made in certain quarters to the fact that part of the West Meadows was kept closed for some considerable time after the Show in 1919, the inference being that this was necessary in order to enable the work of restoration to be carried out. That, however, is not the case. What happened then was that the Superintendent of Parks took the opportunity of laying down several new cricket pitches. The funds for this work were provided by the Highland and Agricultural Society, which contributed a sum of £750 for the purpose of restoring and improving the ground. The pitches laid down with this money are those which are now being used as an obstacle to the Society again having the use of the ground.

"So far as the Society is concerned, the ground will be restored to the condition in which it was taken over, to the satisfaction of the Superintendent of Parks, by the middle of August. It is a recognised fact that the thorough treading to which the Showground is subjected is not injurious, but has a beneficial effect on the turf, which is quite apparent wherever the Society's Shows have been held.

"The Directors have given their most careful consideration to the possibility of obtaining an alternative site within the city boundaries. They have visited and inspected a large number of suggested sites, including Saughton Park, Inverleith Park, King's Park, Slateford, Prestonfield, and others. In none of these is there sufficient space to accommodate the Show.

"The proposed Clause in the Town Council's Draft Provisional Order is intended to secure to the Society immunity from proceedings for interdict in the event of the Show being held in the Meadows. Without such security the Society could not proceed with the Show, as large preliminary outlays are involved which might be entirely wasted. The Directors, therefore, with much regret, feel compelled to announce publicly that, in the event of the proposed Clause being deleted from the Order, the Show of 1927 will not be held in Edinburgh, but at some other centre.

"A final decision as to the venue of the Show cannot be deferred later than next Meeting of Directors on 3rd March. The time will then have arrived when certain preliminary steps in the arrangements for the Show must be taken, and to enable these to proceed, the centre where the Show of 1927 is to be held must be definitely determined."

The Chairman gave notice that in the event of no assurance being forthcoming that the proposed clause in the Provisional Order was likely to be sustained, he would move at next meeting, that the Resolution to hold the Show of 1927 in Edinburgh be rescinded.

MEETING OF DIRECTORS, 3RD MARCH 1926.

Colonel F. J. Carruthers of Dormont, Lockerbie, in the Chair.

Present.—Ordinary Directors—Colonel F. J. Carruthers; The Earl of Elgin and Kincardine, C.M.G.; Mr John Elliot; Mr Thomas Elliot; Mr William Elliot; Mr Alexander Forbes; Mr W. P. Gilmour; Mr Peter Grant; Mr Athole S. Hay; Mr William C. Hunter; Mr J. Ernest Kerr; Mr Duncan M'Laren; Mr James M'Laren; Dr T. G. Nasmyth; Mr James Rodger; Major R. W. Sharpe; Mr A. A. Hagart Spiers. *Extraordinary Directors*—Mr Thomas A. Buttar; Mr George W. Constable; Lieut.-Colonel W. T. R. Houldsworth; Mr A. Thornton Hunter; Mr Hugh M. Leadbetter; Mr James R. Lumsden; Mr James M'Queen; Provost Arthur Middlemas; The Master of Polwarth; Mr James Roberton; Mr Alexander Robertson; Mr J. R. C. Smith; Major Mark Sprot; Mr J. P. Ross Taylor. *Treasurer*—Sir David Wilson, Bart., D.Sc. *Chemist*—Dr J. F. Tocher. *Consulting Engineer*—Professor R. Stanfield.

The Late Mr George Bean.

At the commencement of the Meeting the Chairman made sympathetic reference to the death of Mr George Bean, West Ballochy, Montrose, which had occurred since last Meeting. Mr Bean was a Director of the Society from 1913 to 1918. He was a noted breeder of Clydesdale Horses and a judge at the Society's Shows. He was a man who commanded much respect in the agricultural world. The Chairman submitted the terms of a resolution of regret and sympathy, which was adopted, the members present upstanding, and the Secretary was instructed to forward a copy thereof to Mrs Bean and the family of the deceased.

Honour for Chaplain.

The Chairman also expressed, on behalf of the Board of Directors, their congratulations to the Very Rev. Dr Wallace Williamson, Chaplain to the Society, on the honour of K.C.V.O. recently conferred upon him by the King. With these congratulations they coupled their sincere wishes for his speedy restoration to health.

Letters.

The following letters were submitted:—

Mrs Donald, Fardalehill.—Thanks for Minute of Sympathy on the death of her husband, the late Mr William Donald.

North of Scotland College of Agriculture.—Thanks for grant of Medals for Stackyard Competition.

Scottish Agricultural Implement Dealers' Association.—Thanks for reductions in Implement Stand rents.

International Milk Congress.—Communications regarding the 7th International Milk Congress to be held at Paris from 17th to 19th May 1926.

Presentation of Volume.—The SECRETARY intimated that a copy of the 'Practical Husbandman,' by Robert Maxwell of Arkland, published in 1747, had been presented to the Society by Mr William Birkett, B.Sc., Grangehill, Bishop Auckland. It was resolved that Mr Birkett be thanked for this interesting addition to the Library.

Discoloration of Wool.

A letter was submitted from the Secretary of the Skinners' Association of Scotland with regard to the discoloration of Wool on Sheepskins through dipping with yellow ochre or some such material.

It was agreed that the letter be remitted to the Science Committee for consideration and report.

Wild White Clover Seed.

A letter was submitted from the Board of Agriculture for Scotland forwarding copy of a letter from the Ministry of Agriculture and Fisheries, together with a draft scheme for the establishment of a Wild White Clover-Growers' Association in England.

It was agreed that the letter be remitted to the Science Committee for consideration and report.

International Institute of Agriculture.

A letter was submitted from the Board of Agriculture for Scotland inviting a representative of the Society to attend a conference between representatives of the Ministry of Agriculture and Fisheries, the Board, and the principal Agricultural Associations in Great Britain, to discuss the establishment of direct relations between the Institute and the Associations, and in particular to discuss the representation of these Associations at the General Assembly of the Institute at Rome on 19th April. It was unanimously agreed that the Master of Polwarth be appointed to represent the Society at the proposed conference, which was to be held in London on Tuesday, 9th March.

Kelso Show, 1926.

Proof of Prize List.—A proof print of the Prize List and Regulations was submitted and approved for publication.

Shows Committee.—A Minute of Meeting of Shows Committee, dated 3rd March, was submitted and approved.

The Minute dealt with the following matters—

Judges.—The SECRETARY reported that the Judges nominated at last Meeting, for Poultry, Rabbits, Horse-Shoeing and Rural Industries, had agreed to act, and a list of the names was submitted.

New Implements.—The following were appointed Judges of New Implements entered for the Society's Silver Medal: Mr Thomas A. Buttar, Corston, Coupar-Angus; Mr G. Bertram Shields, Dolphingstone, Tranent; and Mr John Speir, Newton Farm, Hallside, Glasgow.

It was decided that the judging of New Implements commence on the afternoon of Monday, the 28th June, at 2.30 P.M.

Special Prize.—The following Special Prize was accepted, and a vote of thanks accorded to the donor—

Colonel Charles Hope of Cowdenknowes.—£20 towards the prize fund for Hunter Classes.

Long-Service Certificates and Medals.

A further Minute of Meeting of Shows Committee, dated 3rd March, was submitted and approved.

The Minute stated that the Committee had considered a proposal by Mr William Elliot, Lanark, that the minimum service for these awards be reduced from thirty to twenty-five years; that a distinctive ribbon, with a star, be given for each additional ten years' service up to forty-five years; and that a Gold Medal be given for fifty years' service.

It was recommended that the whole matter be remitted to the following Sub-Committee for consideration and report: Mr John Elliot (*Convener*); Mr William Elliot; Mr W. P. Gilmour; Mr Thomas A. Buttar; Colonel F. J. Carruthers; Sir David Wilson, Bart.; and Sir Hugh Shaw Stewart, Bart.

Glasgow Agricultural Society.

A letter was submitted from the Glasgow Agricultural Society, making application for a Special Grant, in view of the fact that they did not hold a Show last year when this Society's Show was in Glasgow.

The SECRETARY reported that this application had been considered that day by the Shows Committee. It had been pointed out that if a precedent of this nature were established similar claims would arise practically every year, as it was the usual practice for Local Societies to suspend their Shows in the year in which this Society's Show visited their districts.

The Shows Committee therefore recommended, with regret, that the application be not granted, and this recommendation was unanimously adopted.

Edinburgh Show, 1927.

A Minute of Meeting of Edinburgh Show Sites Committee, dated 3rd March, was submitted.

The Minute gave in detail negotiations which had taken place between the Society and the Town Council of Edinburgh since the date of last Meeting, and recommended the adoption of the two following Resolutions :—

"(1) That the Town Council be informed that the Directors are unable to accept the offer of the Meadows as a site for the Show of 1927, in view of the uncertainty as to the proposed clause in the Draft Provisional Order being approved, and the certainty that, without the clause, the Society will be called upon to defend an action for interdict."

"(2) That application be made to the Town Council for the use of Saughton Park, including the Football Ground and Golf Course, as a site for the Show; and that a sum of £500 be offered by the Society to cover the cost of levelling and restoring the bunkers, restoring the greens and Golf Course generally, and to cover loss of revenue through play being suspended for a period of about four months."

After full discussion, Colonel F. J. CARRUTHERS moved, and Sir DAVID WILSON, Bart., seconded, that the recommendations of the Sites Committee be adopted.

The EARL OF ELGIN AND KINCARDINE moved as an amendment that the second Resolution be deleted. He was in favour of the adoption of the first Resolution, but desired the question of another site to be left open until next Meeting.

The Amendment was seconded by Mr GEORGE W. CONSTABLE.

On a vote being taken, eighteen voted for the Motion, and eleven for the Amendment, so that the recommendations of the Sites Committee were adopted.

Show of 1928.

The following were appointed a Committee to look out for a suitable site in the Aberdeen Show Division for the Show of 1928, and report to the Board: Mr Alexander Forbes (*Convener*); Mr J. E. Kerr; Mr William Low; Mr J. T. M'Laren; Mr A. H. Reid; Mr John P. Sleigh; Mr Falconer L. Wallace; Colonel F. J. Carruthers; and Professor R. Stanfield.

PROCEEDINGS AT GENERAL MEETINGS.

GENERAL MEETING, 3RD JUNE 1925.

Sir DAVID WILSON, D.Sc., of Carbeth, Bart., in the Chair.

New Members.

Three hundred and seventy-two candidates were balloted for and admitted Members of the Society.

Election of Office-Bearers.

The following noblemen and gentlemen were elected office-bearers of the Society for the year 1925-26 :—

President.—The Duke of Roxburghe, K.T., M.V.O., Floors Castle, Kelso.

Vice-Presidents.—The Earl of Dalkeith, Eildon Hall, St Boswells; The Earl of Home, The Hirsel, Coldstream; Major Charles H. Scott Plummer of Sunderland Hall, Selkirk; Mr M. G. Thorburn of Glenormiston, Innerleithen.

Ordinary Directors, 1922.—Mr Duncan M'Laren of Fairnington, Roxburgh; Mr G. Bertram Shields, Dolphingstone, Tranent; Mr Falconer L. Wallace of Candacraig and Balcairn, Strathdon, Aberdeenshire; Mr James Rodger, Rochdale Lodge, Abercromby Drive, Bridge of Allan; Colonel F. J. Carruthers of Dormont, Lockerbie; Captain John MacGillivray of Calrossie, Nigg, Ross-shire; Mr John Stewart of Struthers, J.P., Woodburne House, Ceres, Fife; Mr Alexander Murdoch, East Hallside, Newton, Lanarkshire.

1923.—Mr Thomas Elder of Stevenson, Haddington; Mr Alexander Forbes, Rettie, Banff; Mr James Gray, Birkenwood, Kippen Station; Mr John M'Caig of Belmont, Stranraer; Mr Thomas Elliot, Sciberscross, Rogart; The Earl of Elgin and Kincardine, C.M.G., Broomhall, Dunfermline; Mr A. A. Hagart Speirs of Elderslie, Houston House, Houston; Major Robert W. Sharpe of The Park, Earlston.

1924.—Mr William Low of Balmakewan, Marykirk, Montrose; Mr J. Ernest Kerr of Harviestoun, Dollar; Mr Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive; Mr Alex. P. Gordon of Bindal, Portmahomack; Mr William S. Niven, The Loan, Errol; Mr William Elliot, Muirglen, Lanark; Mr John Elliot, Balnakiel, Galashiels; Mr Harry Armour, J.P., Niddry Mains, Winchburgh.

1925.—Mr James M'Laren, Cornton, Stirling; Mr W. P. Gilmour, Balmangan, Kirkcudbright; Mr Peter Grant, The Hotel, Carr-Bridge, Strathspey; Mr William C. Hunter of Arngask, Glenfarg; The Hon. T. G. P. Corbett, Rowallan, Kilmarnock; Mr Athole S. Hay of Marlefield, Roxburgh; Dr Thomas G. Nasmyth, Canaan Lodge, 43 Canaan Lane, Edinburgh; Mr Alfred H. Reid, Hillhead, Ellon.

Extraordinary Directors.—Mr Thomas A. Buttar, Corston, Coupar-Angus; Mr J. T. M'Laren, The Leuchold, Dalmeny House, Edinburgh; Mr James R. Lumsden of Arden, Dumbartonshire; Mr James M'Queen of Crofts, Dalbeattie; Mr John Speir, Newton Farm, Hallside, Glasgow; Lieut.-Colonel W. T. R. Houldsworth of Kirkbride, Maybole; Mr John P. Sleigh of St John's Wells, Fyvie; Mr Alexander Robertson, Estate Office, Polmaise, Stirling; Mr George Will, The

Farm, Crichton Royal, Dumfries; Mr A. Thornton Hunter (Alexander Jack & Sons, Ltd.), Maybole; Mr George W. Constable, Traquair Estate Office, Innerleithen; Mr Gilbert Davidson of Burnfoot, Hawick; Mr James Grieve, Rumbletonlaw, Greenlaw; Mr David S. Hutcheson, Broomhill, Melrose; Mr Hugh M. Leadbetter, Knowesouth, Jedburgh; Mr Arthur Middlemas, Provost of Kelso; The Master of Polwarth, Harden, Hawick; Mr James Roberton, Morebattle Tofts, Kelso; Major Mark Sprot of Riddell, Lilliesleaf; Mr J. P. Ross Taylor, Mungoswalls, Duns.

Treasurer.—Sir David Wilson, Bart., D.Sc., of Carbeth, Killearn.

Honorary Secretary.—Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip.

Glasgow Show, 1925.

Mr JOHN SPEIR, Convener of the Shows Committee, reported as follows: I have to report that arrangements for the forthcoming Show at Glasgow, on 14th July and three following days, are well advanced. The site provided by the Corporation of Glasgow in Bellahouston Park is both commodious and convenient, and the Magistrates and Council are doing everything in their power to further the success of the Show.

The entries, which have just closed, show a gratifying increase, both in the Section for Implements and Machinery and in that for Live Stock. In the Implement Section approximately 9000 feet (frontage) have been applied for, which is about 600 feet more than last year. In the Stock Section there is a substantial increase in the entries of Cattle and Horses, while Sheep and Pigs remain about the same. The new Section for Fur-bearing Rabbits has secured an entry of 178 exhibits, and the new Classes for Large White Ulster Pigs have attracted more entries than any other Class of Pigs with the exception of Large Blacks.

The Show gives promise of being one of the largest in the history of the Society, and, provided good weather is experienced before and during the Show, there is every reason to hope it will be an outstanding success.

Border Show of 1926.

Mr JOHN ELLIOT, Balnakiel, Galashiels, reported as follows: In view of the adverse opinions expressed at the anniversary General Meeting in January regarding the selection by the Directors of Peebles as a site for the Border Show of 1926, the Board has given further consideration to the matter. Correspondence was entered into with the town of Kelso with a view to ascertaining whether the London & North-Eastern Railway Company were prepared to give a definite assurance that facilities would be provided at Kelso whereby the Show traffic could be handled in an efficient manner.

In the meantime a communication was received from the proprietor of the ground at Peebles withdrawing his offer of the site. The Directors therefore had no alternative but to rescind the decision arrived at on 5th November 1924 that the Show of 1926 be held at Peebles.

As the result of a meeting between the Kelso Committee and representatives of the London and North-Eastern Railway Company, the Directors were informed that the railway company were prepared to provide, if it were decided to hold the Show at Kelso in 1926, a loading bank, on the down side of the line to the west of Kelso Station, as was done in 1898. With this provision the railway officials were of opinion that the Live Stock and other traffic could be satisfactorily dealt with.

At their meeting on 1st April the Directors decided that the Show of 1926 be held at Kelso. While arriving at this decision, they felt that in some respects, notably the lack of hotel accommodation in the town, Kelso could not be regarded as an absolutely ideal centre for the Show.

The site in Springwood Park is in every way suitable. The town and district, in addition to a free site, have kindly promised a donation of £350, and the Border Union Agricultural Society a donation of £250, to the Show funds. The Town Council of Kelso have also promised a free supply of water and to lead gas to the Showyard.

Edinburgh Show, 1927.

Mr J. T. M'LAREN, The Leuchold, Dalmeny, Chairman of Directors, reported that the Directors had appointed a Committee to look out for a suitable site, in the Edinburgh Show Division, for the Show of 1927. An application had been made to the Magistrates and Council of the City of Edinburgh that the Meadows be placed at the disposal of the Society for the purposes of the Show. The matter was under consideration by the Parks Committee of the Town Council, which had intimated its willingness to receive a deputation on the subject during the course of the present month.

Mr M'Laren further referred to former successful Shows held in the Meadows, and pointed out its great advantages as a site in view of its central position and great accessibility. He hoped that no obstacle would be placed in the way of their holding the Show in the Meadows.

Proposed Scottish National Milk and Health Association.

Mr J. T. M'Laren said that the Directors at their meeting that day had before them an application from the Provisional Council of the proposed Scottish National Milk and Health Association for a contribution to its funds. The organisation was in its initial stages, and was doing more or less propaganda work, with a view to increasing the supply and encouraging the demand for clean and good milk. The Directors felt that this was an organisation which ought to be supported by the Society, and they had decided to intimate a contribution of £100 towards the preliminary expenses of the movement. He moved approval of the grant, and this was unanimously agreed to.

Agricultural Education.

Colonel F. J. Carruthers, Convener of the Education Committee, submitted the following report on the examination held at Leeds in April last for the National Diploma in Agriculture. 172 candidates presented themselves for examination. 69 candidates were from Scotland. As a result of the examination, 48 diplomas were awarded, 2 with Honours. Of the 172 candidates, 19 appeared for all the subjects, and of these 2 passed: 76 had passed certain subjects previously, and were completing the examination this year, and of these 46 obtained the diploma. The remaining 77 candidates presented themselves for a group of three or four subjects, and of these 36 passed in the subjects for which they appeared, and were entitled to appear for the remaining subjects in 1926.

Report by Chemist.

Dr J. F. Tocher, Consulting Chemist to the Society, submitted a Report on the work done in his department during the past half-year

The substance of Dr Tocher's Report appears on pp. 238-249 of this volume.

The late Mr Edward M. Cowie.

Mr J. T. M'Laren made sympathetic reference to the death of Mr Edward M. Cowie, chief clerk to the Society, regarding whom a resolution of regret and condolence had just been passed at the meeting of Directors. He explained that many of those present were leaving the meeting in order to attend Mr Cowie's funeral, which was taking place at 3.30 that afternoon.

The proceedings terminated with a cordial vote of thanks to the Chairman, on the motion of Mr J. T. M'Laren.

GENERAL MEETING OF MEMBERS HELD IN THE SHOWYARD, GLASGOW, 15th JULY 1925.

The Right Hon. The Lord Blythswood, K.C.V.O., President of the Society, in the Chair.

In welcoming the members, the President said that he was sure their grateful thanks were due to the Corporation of Glasgow for what they had done for the Society. He should like to take that opportunity of thanking Sir Thomas Paxton for having acceded to his special request that he should be the Chairman of the Local Committee, and also to say how very much they felt they owed to the staff of the Society for the work they did all the year round for the benefit of agriculture in Scotland, and especially to make that Show the great success which it always was. They had been greatly assisted by the excellent facilities the railway companies had given them. He had had experience of another Show, the Bath and West, and their Show was very nearly held up by the mismanagement of the railways. Here they had been extremely lucky. That show was specially for the south-western district, comprising the counties of Ayr, Lanark, Renfrew, Bute, and Argyll. Glasgow was not yet an agricultural district, but they sincerely welcomed the citizens of Glasgow, and they trusted that they would take a great interest in agriculture, and incidentally swell the "gate." Agriculture was their oldest industry, and, unfortunately, at the present time black clouds hung over its prospects. But there was a silver lining which shows of that character brought to their mind. It was that, in this island, they knew how to breed horses, cattle, and sheep of such excellent quality that buyers from many lands all over the world continued to come there in order to replenish and improve their own breeding stocks. It was indeed always worth while to breed the best. He trusted that many who visited the Show would benefit by the lessons they learned of seeing the best stock in the country and all the latest agricultural appliances. The attendance on the previous day was 1000 more than at Perth last year. It was only once surpassed, at the Show in Edinburgh in 1919; and from what he saw of the crowd that day he thought they should have another record. That Show was the largest exhibition of agricultural machinery and implements in the history of the Society. The number of cattle, horses, and sheep entered had seldom been equalled at the Society's Show. He trusted when the Show closed they would find a record not only for the Glasgow district, but for the whole of Scotland.

Votes of Thanks.

Mr J. T. M'Laren, Chairman of Directors, moved "That a cordial vote of thanks be accorded to the Lord Provost, Magistrates, and Council of the City of Glasgow for providing an excellent site for the Show, for their liberal donation to the Show funds, and for their hearty co-operation and assistance in all matters tending to promote the success of the Show." He said the site granted by the Corporation was one of the best that the Society had ever had; the Corporation had also given a donation of five hundred guineas, a supply of water free of charge, and many other facilities of great value. They were very deeply indebted to the Corporation for what they had done, and he asked the meeting to accord them a most hearty vote of thanks.

Mr G. Bertram Shields, Dolphingstone, Tranent, in seconding, said they had the practical help of some of the Glasgow Corporation on the field. Those merchant princes of Glasgow had displayed a wonderful knowledge of agriculture, and he was told that some of them were now going to compete for farms against the farmers of Scotland. If their merchant princes started to compete with the agriculturists, he did not know what was going to happen. However, they would be delighted to see as many of them as possible join up in the fight to keep Scottish agriculture where it had always been—right at the top of agriculture the world over.

In the absence of Lord Provost Montgomery, Bailie David M'Cowan replied. He observed that Lord Blythswood said that Glasgow was not an agricultural district. He hoped, however, that it would be soon, and that as a result of their present movement for extension they would get a little, at all events, so that they could spread their wings further. Whatever they did get, he hoped they would never interfere with the ground they had placed at the disposal of the Highland Society when they came to Glasgow. Mr Shields had mentioned that there was a proposal on the part of some of the merchant princes to enter upon agriculture. From his experience of millionaires taking up farming, he generally found that their work in that direction was short-lived. The millionaires earned the experience, and the farmers got back their farms. History repeated itself very often, so he did not think Mr Shields need have much fear of that. They all regretted the difficult problems with which the country was faced at the present time, and it was evident that the more they depended upon the resources of the British Empire the better it would be for the nation in the future. Our own kith and kin from South Africa, as they learned on the previous night, were willing to do their best to help Britain out, and he hoped they in the United Kingdom would reciprocate that feeling.

Mr Thomas A. Buttar, Corston, Coupar-Angus, moved that a cordial vote of thanks be given to Sir Thomas Paxton, Bart., Convener, and the Members of the Local Committee of Management, for all the work they had undertaken and successfully carried out in connection with the Show.

Mr John Elliot, Balnakiel, Galashiels, seconded.

Sir Thomas Paxton, Bart., Convener of the Local Committee, replied.

Mr John Speir, Newton, Convener of the Shows Committee, moved that a cordial vote of thanks be accorded to the railway companies for the efficient manner in which they had handled the large amount of traffic in connection with the Show.

Mr **Alexander Murdoch**, East Hallside, seconded.

Mr **Donald A. Mathieson**, General Manager for Scotland of the L.M.S. Railway Company, said the railway companies recognised that they had a public duty, and it was very pleasing to think that the Society should approve of what they had done. The Society were all the time acting in the interests of the greatest industry in the country, and if that great industry of agriculture was going on well, it was all in the interests of the railway companies. Their interests were more or less common. The railway companies did not have many bouquets thrown to them—it was usually the opposite—and it would afford him great pleasure to convey to his Directors that high appreciation from the Highland Society.

The MacRobert Champion Silver Bell.

The **Chairman** afterwards announced the gift from Lady MacRobert, Douneside, Tarland, of a handsome silver bell as a challenge trophy for the best animal of the British Friesian breed. At the present Show the trophy had been won by Dr William Sinclair, Loirston, Aberdeen, and he had great pleasure in accepting the bell on behalf of the Society, and expressing their thanks to Lady MacRobert for her gift.

A vote of thanks to Lord Blythswood for presiding, moved by Mr **William Low**, Balmakewan, concluded the proceedings.

ANNIVERSARY GENERAL MEETING, 6TH JANUARY 1926.

The Duke of Roxburghe, K.T., M.V.O., &c., President, in the Chair.

New Members.

Two hundred and seventy-three candidates for election were balloted for and admitted Members of the Society.

Vacancies on Board of Directors.

Colonel F. J. **Carruthers** of Dormont, Lockerbie, Chairman of Directors, moved the following recommendations of the Board of Directors—(*a*) that Mr James M'Clean, Craigmount, Portpatrick, be elected an Ordinary Director for the Dumfries Show Division, to fill the vacancy caused by the death of the late Mr John M'Caig; (*b*) that Mr J. R. C. Smith, Mowhaugh, Kelso, be elected an Extraordinary Director for the Border Show Division, to fill the vacancy caused by the death of the late Mr James Grieve.

The motion was unanimously adopted, and the gentlemen named were duly elected.

Finance.

Sir **David Wilson** of Carbeth, Bart., Convener of Finance Committee, submitted the Accounts of the Society for the year to 30th November 1925. The receipts for the year from all sources reached a total of £31,831, 18s. 5d. This sum exceeded the outlays by £7096, 14s. 5d. Life subscriptions amounted to £1283, 2s. In the past year the expenditure on educational work amounted to £230, 6s. 4d., and on the work in the chemical and veterinary departments to £593, 15s. 3d.

He moved the approval of the usual grant of £5 to the Society for the Prevention of Cruelty to Animals for the year 1926.

Sir **Hugh Shaw Stewart** of Greenock and Blackhall, Bart., seconded, and the Accounts and grant were approved.

Argyll Naval Fund.

Lieut.-Colonel W. T. R. **Houldsworth** submitted the report on the Argyll Naval Fund for 1924-25, which showed that the income for the year amounted to £339, 5s. 5d., while the expenditure was £320, in grants to eight naval cadets.

Glasgow Show, 1925.

Mr JOHN SPEIR, Newton, reported on the Show held at Glasgow in July 1925. Following a wet spring, there were two months of dry weather preceding the Show, which greatly facilitated the work of erection. The actual week of the Show was showery, but only on Thursday afternoon did rain fall to such an extent as to affect the gate. The attendance of the public was exceptionally large, being surpassed only by the Shows at Edinburgh and Aberdeen in 1919 and 1920. The number who paid for admission during the week was 71,536, which compared with 45,706 at Paisley in 1913. The site provided by the Corporation of Glasgow in Bellahouston Park was both ample and convenient, sufficient scope being available for an attractive arrangement of the Showyard erections. Besides granting a free supply of water, free police supervision, and a donation of 500 guineas to the Show funds, the Corporation did everything in their power to further the success of the Show. The entry of live stock was large, especially in the horse section, and all over reached the usual high standard. Some exhibits from England were not forward owing to the prevalence of foot-and-mouth disease in that country. The exhibition of Agricultural Implements and Machinery was unusually comprehensive, and formed a distinct feature of the Show. The Accounts showed a credit balance of about £4100, which was the largest in the history of the Society's Shows.

Mr Speir added that it had given him the greatest pleasure to act as Convener of the Shows Committee last year. He took no credit personally for the handsome balance, which was due in great measure to the assistance received from the Corporation of Glasgow, and especially from Sir Thomas Paxton, Bart., who had acted as Convener of the Local Committee.

Kelso Show, 1926.

Mr JOHN ELLIOT, Balnakiel, Galashiels, Convener of the Shows Committee, reported that arrangements were proceeding for the Show to be held that year at Kelso. In fixing the date of the Show, the Directors were faced with the difficulty that the Royal Show was again to be held a week later than usual—viz., 6th to 10th July. In the week following the Royal there was the Northumberland Show, and the week after that was taken up by the Yorkshire Show. They had therefore decided that the only course open to them was to hold the Show before the Royal Show at Reading, and had accordingly fixed the date for Tuesday, 29th June, and three following days. The town of Kelso had provided an excellent site for the Show in Springwood Park, which was less than half a mile from the railway station, and in addition were granting a supply of water free of charge. Further, a donation of £350 to the Show funds was promised by the town and district of Kelso, and a donation of £250 by the Border Union Agricultural Society The Prize List, then in course of preparation, was on a generous scale, the amount to be offered in prizes from the Society's own funds reaching a total of about £3658, compared with £2614 at Hawick in 1914. In addition, there were the usual large number of valuable Challenge Cups, Medals, and Special Prizes, besides prize money contributed by Breed Societies and private donors. Classes for Hunters were being provided on an extended scale, and a new departure was the provision of classes for Shepherds' Pack Sheep. These would comprise sections for Blackface, Cheviot, Border Leicester, and Half-Bred, and the best animal in each section would be awarded a Gold Medal, generously offered by the President of the Society.

The PRESIDENT said the members of the Society would learn with the greatest pleasure that His Royal Highness The Prince of Wales had given him authority to announce that he proposed to visit the Show at Kelso at the end of June. This would be a great event in the Borders, and would give a fillip to the Show. It would also demonstrate the continued interest that the Prince had always taken in British as well as in Imperial agriculture.

Edinburgh Show, 1927.

Mr G. BERTRAM SHIELDS, Dolphingstone, reported that the Show of 1927 fell to be held at Edinburgh, and the Corporation had again been good enough to place the Meadows at the Society's disposal as a site for the Show. This was an ideal site, practically in the centre of the city, and most convenient of access to visitors from all parts of the country. As negotiations with the town were still proceeding in regard to certain matters relating to the use of the ground, it was not possible to report further on the arrangements at that time.

Show of 1928.

Mr **William** Low of Balmakewan moved the following resolution, which had been that day adopted by the Board of Directors: "That, provided a suitable site is available, and satisfactory financial and other arrangements can be made, the Society's Show of 1928 be held in the Aberdeen Show Division."

Mr T. A. **Buttar**, Corston, seconded, and the motion was duly adopted.

Grants to Local Societies.

Mr **James** R. **Lumsden** of Arden submitted the report on District Shows and Competitions, showing that in 1925 grants of money and medals had been given in 76 districts. The total expenditure under this head amounted to £731, 18s. 4d. For the current year the Directors proposed the following grants: fourteen districts for grants of £12 each for cattle, horses, and sheep, and nineteen districts in intermediate years, with a grant of three silver medals to each; eleven districts for grants of £15 each for stallions; special grants of £15 to the Northern Arts and Crafts Society; £60 for Federations of Women's Rural Institutes; £20 to Kilmarnock Cheese Show; £5 to Shetland; £3 to North Uist; £3 to Rousay, Orkney; £3 to South Ronaldshay and Burray; a gold medal and a silver medal to the British Dairymaids' Association; eleven districts for two medals each; the usual medals at ploughing and hoeing competitions; two medals to one district for cottages and gardens; Long-Service Medals and Certificates, say, £92, 10s., making the total sum offered in 1926, £718, 8s.

Education.

Colonel F. J. **Carruthers** of Dormont, Lockerbie, Convener of the Education Committee, reported on the results of the thirtieth examination held last autumn for the National Diploma in Dairying. At the examination in England there were 63 candidates, of whom 40 obtained the diploma and 23 failed; at the examination in Kilmarnock there were 49 candidates, 35 obtaining the diploma and 14 failing. The Diploma with Honours was awarded to 1 of the successful candidates at the English centre, and 1 at the Scottish centre. The names of the successful candidates, as well as the names of the winners of the National Diploma in Agriculture at the examination held last April, would be published in the next volume of 'Transactions.'

The examinations for these diplomas would again be held during the ensuing year.

The Society's examination for First and Second Class Certificates in Forestry would be held this year on 16th, 17th, and 18th March, provided a sufficient number of candidates presented themselves for examination.

Science.

Report by Chemist.

Dr J. F. **Tocher**, Consulting Chemist to the Society, reported on the work of the department during the year 1925.

The substance of Dr Tocher's report appears on pp. 238-249 of this volume.

The Sugar-Beet Industry.

A member suggested that the sugar-beet industry should receive attention in the 'Transactions' of the Society.

The **President** suggested that this recommendation should be remitted to the Directors.

This was agreed to.

Vote of Thanks

Colonel F. J. **Carruthers**, in moving a vote of thanks to the President, said it was the first duty of the members to thank the President for accepting office. He had told the Directors that day at their meeting that he would help the Society in every way he could, and he had made a good beginning by intimating the intention of the Prince of Wales to visit the Kelso Show. They might take it for granted that the promised visit was entirely due to the initiative of the President.

The **President** said his thanks were due to the Society for electing him to be President. His family connection with the Society had been a very long one, and he was glad that there was no break in his case. If he could do anything to forward the activities and enterprise of the Society he would be only too glad to do so. He did not know that the financial side of the Kelso Show would be as profitable as that of the Glasgow Show, but it would be for the benefit of the agricultural industry if some of their profits were spent on the Borders.

APPENDIX

PREMIUMS

OFFERED BY

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND IN 1926

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GENERAL NOTICE.

The Highland Society was instituted in the year 1784, and incorporated by Royal Charter in 1787. Its operation was at first limited to matters connected with the improvement of the Highlands of Scotland; but the supervision of certain departments, proper to that part of the country, having been subsequently committed to special Boards of Management, several of the earlier objects contemplated by the Society were abandoned, while the progress of agriculture led to the adoption of others of a more general character. The exertions of the Society were thus early extended to the whole of Scotland, and have since been continuously directed to the promotion of the science and practice of agriculture in all its branches.

In accordance with this more enlarged sphere of action, the original title of the Society was altered, under a Royal Charter, in 1834, to The Highland and Agricultural Society of Scotland.

Among the more important measures which have been effected by the Society are—

1. Agricultural Meetings and General Shows of Stock, Implements, &c., held in the principal towns of Scotland, at which exhibitors from all parts of the United Kingdom are allowed to compete.
2. A system of District Shows instituted for the purpose of improving the breeds of Stock most suitable for different parts of the country, and of aiding and directing the efforts of Local Agricultural Associations.
3. The encouragement of Agricultural Education, under powers conferred by a supplementary Royal Charter, granted in 1856, and authorising the Society to grant Diplomas to Students of Agriculture; and by giving grants in aid of education in Agriculture and allied sciences. In 1900 the Society discontinued its own Examination, and instituted jointly with the Royal Agricultural Society of England an Examination for a National Diploma in Agriculture.
4. The advancement of the Veterinary Art, by conferring Certificates on Students who have passed through a prescribed curriculum, and who are found, by public examination, qualified to practise. Terminated in 1881 in accordance with arrangements with the Royal College of Veterinary Surgeons.
5. The institution of a National Examination in Dairying, jointly with the Royal Agricultural Society of England.
6. The institution of an Examination in Forestry for First and Second Class Certificates.
7. The appointment of a chemist for the purpose of promoting the application of science to agriculture.
8. The establishment of a Botanical Department.
9. The appointment of Entomologist to advise members regarding insect pests.
10. The annual publication of the 'Transactions,' comprehending papers by selected writers, Prize Reports, and reports of experiments, also an abstract of the business at Board and General Meetings, and other communications.
11. The management of a fund left by John, 5th Duke of Argyll (the original President of the Society), to assist young natives of the Highlands who enter His Majesty's Navy.

CONSTITUTION AND MANAGEMENT.

The general business of The Highland and Agricultural Society is conducted under the sanction and control of the Royal Charters, referred to above, which authorise the enactment of Bye-Laws.

The Office-Bearers consist of a President, Four Vice-Presidents, Thirty-two Ordinary and Twenty Extraordinary Directors, a Treasurer, an Honorary and an Acting Secretary, an Auditor, and other Officers.

The Supplementary Charter of 1856 provides for the appointment of a Council on Education, consisting of Sixteen Members — Nine nominated by the Charter, and Seven elected by the Society.

PRIVILEGES OF MEMBERS

MEMBERS OF THE SOCIETY ARE ENTITLED—

1. *To receive a free copy of the 'Transactions' annually.*
2. *To apply for District Premiums that may be offered.*
3. *To report Ploughing Matches for Medals that may be offered.*
4. *To Free Admission to the Shows of the Society.*
5. *To exhibit Live Stock and Implements at reduced rates.*[1]
6. *To have Manures and Feeding-Stuffs analysed at reduced fees.*
7. *To have Seeds tested at reduced fees.*
8. *To have Insect Pests and Diseases affecting Farm Crops inquired into.*
9. *To attend and vote at General Meetings of the Society.*
10. *To vote for the Election of Directors, &c., &c.*

ANALYSIS OF MANURES AND FEEDING-STUFFS

The Fees of the Society's Chemist for Analyses made for Members of the Society shall, until further notice, be as follows :—

The determination of *one* ingredient in a single sample of manure or of a feeding-stuff .	5s.
The determination of *two or more* ingredients in a single sample of manure or of a feeding-stuff	10s.

These charges apply only to analyses made for agricultural purposes for the sole and private use of Members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

The Society's Chemist, if requested, also supplies valuations of manures, according to the Society's scale of units.

SEEDS, CROP DISEASES, INSECT PESTS, &c.

The rates of charges for the examination of plants and seeds, crop diseases, insect pests, &c., will be had on application to the Secretary.

ELECTION OF MEMBERS

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January and June. It is not necessary that the proposer should attend the Meeting.

CONDITIONS OF MEMBERSHIP

Higher Subscription.—The ordinary annual subscription is £1, 3s. 6d., and the ordinary subscription for life-membership is £12, 12s.; or after ten annual payments have been made, £7, 7s.

Lower Subscription.—Proprietors farming the whole of their own lands, whose rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors resident on Estates, Land Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, and such other persons as, in respect of their official or other connection with Agriculture, the Board of Directors may consider eligible, are admitted on a subscription of 10s. annually, which may be redeemed by one payment of £7, 7s., and after eight annual payments of 10s. have been made, a Life Subscription may be purchased for £5, 5s., and after twelve such payments, for £3, 3s.[2] Subscriptions are payable on election, and afterwards annually in January.

According to the Charter, a Member who shall not have objected to his election, on the same being intimated to him by the Secretary, cannot retire until he has paid, in annual subscriptions or otherwise, an amount equivalent to a life composition.

Members are requested to send to the Secretary the names and addresses of Candidates they have to propose (stating whether the Candidates should be on the £1, 3s. 6d. or 10s. list).

JOHN STIRTON, *Secretary.*

3 GEORGE IV. BRIDGE, EDINBURGH.

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[1] Firms are not admitted as Members; but if one partner of a firm becomes a Member, the firm is allowed to exhibit at Members' rates.

[2] Candidates claiming to be on the 10s. list must state under which of the above designations they are entitled to be placed on it.

ESTABLISHMENT FOR 1925-1926.

President.

The DUKE OF ROXBURGHE, K.T., M.V.O., Floors Castle, Kelso.

Vice-Presidents.

The EARL OF DALKEITH, Eildon Hall, St Boswells.
The EARL OF HOME, The Hirsel, Coldstream.
Major CHARLES H. SCOTT PLUMMER of Sunderland Hall, Selkirk.
M. G. THORBURN of Glenormiston, Innerleithen.

Ordinary Directors.

Year of Election.	
1922	DUNCAN M'LAREN of Fairnington, Roxburgh.
	G. BERTRAM SHIELDS, Dolphingstone, Tranent.
	FALCONER L. WALLACE of Candacraig and Balcairn, Strathdon, Aberdeenshire (24 Park Lane, London, W. 1).
	JAMES RODGER, Rockdale Lodge, Bridge of Allan.
	Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
	Captain JOHN MACGILLIVRAY of Calrossie, Nigg, Ross-shire.
	JOHN STEWART of Struthers, J.P., Woodburne House, Ceres, Fife.
	ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.
1923	THOMAS ELDER of Stevenson, Haddington.
	ALEXANDER FORBES, Rettie, Banff.
	JAMES GRAY, Birkenwood, Kippen Station.
	JAMES M'CLEAN, Craigmount, Portpatrick (elected 2nd Dec. 1925).
	THOMAS ELLIOT, Sciberscross, Rogart.
	The EARL OF ELGIN AND KINCARDINE, C.M.G., Broomhall, Dunfermline.
	A. A. HAGART SPEIRS of Elderslie, Houston House, Houston.
	Major ROBERT W. SHARPE of The Park, Earlston.
1924	WILLIAM LOW of Balmakewan, Marykirk, Montrose.
	J. ERNEST KERR of Harviestoun, Dollar.
	ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
	ALEXANDER P. GORDON of Bindal, Portmahomack.
	WILLIAM S. NIVEN, The Loan, Errol.
	WILLIAM ELLIOT, Muirglen, Lanark.
	JOHN ELLIOT, Balnakiel, Galashiels.
	HARRY ARMOUR, J.P., Niddry Mains, Winchburgh.
1925	JAMES M'LAREN, Cornton, Stirling.
	W. P. GILMOUR, Balmangan, Kirkcudbright.
	PETER GRANT, The Hotel, Carr-Bridge, Strathspey.
	WILLIAM C. HUNTER of Arngask, Glenfarg.
	The Hon. T. G. P. CORBETT, Rowallan, Kilmarnock.
	ATHOLE S. HAY of Marlefield, Roxburgh.
	Dr THOMAS G. NASMYTH, Canaan Lodge, 43 Canaan Lane, Edinburgh.
	ALFRED H. REID, Hillhead, Ellon.

Extraordinary Directors.

1924
Thomas A. Buttar, Corston, Coupar-Angus.
J. T. M'Laren, The Leuchold, Dalmeny House, Edinburgh.
James R. Lumsden of Arden, Dumbartonshire.
James M'Queen of Crofts, Dalbeattie.
John Speir, Newton Farm, Hallside, Glasgow.

1925
Lieut.-Col. W. T. R. Houldsworth of Kirkbride, Maybole.
John P. Sleigh of St John's Wells, Fyvie.
Alexander Robertson, Estate Office, Polmaise, Stirling.
George Will, The Farm, Crichton Royal Institution, Dumfries.
A. Thornton Hunter (Alexander Jack & Sons, Ltd.), Maybole.

Show District.

1925
George W. Constable, Traquair Estate Office, Innerleithen.
Gilbert Davidson, Burnfoot, Hawick.
David S. Hutcheson, Broomhill, Melrose.
Hugh M. Leadbetter of Knowesouth, Jedburgh.
Arthur Middlemas, Provost of Kelso.
The Master of Polwarth, Harden, Hawick.
James Roberton, Morebattle Tofts, Kelso.
J. R. C. Smith, Mowhaugh, Kelso.
Major Mark Sprot of Riddell, Lilliesleaf.
J. P. Ross Taylor, Mungoswalls, Duns.

Office-Bearers.

Sir David Wilson, Bart., D.Sc., of Carbeth, Killearn, *Treasurer.*
Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip, *Honorary Secretary.*
Rev. A. Wallace Williamson, D.D., 44 Palmerston Place, *Chaplain.*
John Stirton, *Secretary.*
J. G. Yardley, *Chief Clerk.*
R. C. Todd, *Second Clerk.*
William Home Cook, C.A., 42 Castle Street, *Auditor.*
J. F. Tocher, D.Sc., F.I.C., 41½ Union Street, Aberdeen, *Chemist.*
Professor R. Stanfield, A.R.S.M., M.Inst.C.E., F.R.S.E., 24 Mayfield Gardens, Edinburgh, *Consulting Engineer.*
R. S. MacDougall, M.A., D.Sc., 9 Dryden Place, *Consulting Entomologist.*
Tods, Murray, & Jamieson, W.S., 66 Queen Street, *Law Agents.*
William Blackwood & Sons, 45 George Street, *Publishers.*
Henry Munro, Ltd., 82 Mitchell Street, Glasgow, *Advertising Agents.*
Hamilton & Inches, Princes Street, *Silversmiths.*
Alexander Kirkwood & Son, 9 St James' Square, *Medallists.*
John Reid, 55 Blenheim Place, Aberdeen, *Showyard Erector.*
Andrew Brown, *Messenger.*

Chairman of Board of Directors.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie.

Chairmen of Committees.

1.	*Argyll Naval Fund*	Maclachlan of Maclachlan, Castle Lachlan, Strachur.
2.	*Finance, Chambers, and Law*	Sir David Wilson, Bart., D.Sc., of Carbeth.
3.	*Publications*	Lieut.-Col. W. T. R. Houldsworth of Kirkbride, Maybole.
4.	*Shows*	John Elliot, Balnakiel, Galashiels.
5.	*Implements and Machinery*	G. Bertram Shields, Dolphingstone, Tranent.
6.	*Science*	Sir David Wilson, Bart., D.Sc., of Carbeth.
7.	*General Purposes*	Colonel F. J. Carruthers of Dormont, Lockerbie.
8.	*Education*	Colonel F. J. Carruthers of Dormont, Lockerbie.
9.	*Forestry*	Sir Hugh Shaw Stewart, Bart., C.B.
10.	*Office-Bearers*	Colonel F. J. Carruthers of Dormont, Lockerbie.

COMMITTEES FOR 1925-1926.

1. ARGYLL NAVAL FUND.

Maclachlan of Maclachlan, Castle Lachlan, Strachur, *Convener.*
The **Earl of Elgin and Kincardine**, C.M.G., Broomhall, Dunfermline.
Colonel Sir **John Gilmour**, Bart., M.P., D.S.O., of Montrave, Leven.
Lieut.-Col. W. T. R. **Houldsworth** of Kirkbride, Maybole.
Sir **Kenneth Mackenzie** of Gairloch, Bart., Conan House, Conon Bridge, Ross-shire.
J. T. **M'Laren**, The Leuchold, Dalmeny House, Edinburgh.
General **Archibald Stirling** of Keir, Dunblane.
Sir **David Wilson**, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio.*
Sir **Hugh Shaw Stewart** of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip, Hon. Secretary, *ex officio.*
Colonel F. J. **Carruthers** of Dormont, Lockerbie, Chairman, *ex officio.*

2. FINANCE, CHAMBERS, AND LAW.

Sir **David Wilson**, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *Convener.*
Thomas A. Buttar, Corston, Coupar-Angus.
Colonel F. J. **Carruthers** of Dormont, Lockerbie.
James I. Davidson, Saughton Mains, Corstorphine.
John Elliot, Balnakiel, Galashiels.
William C. Hunter of Arngask, Glenfarg.
J. **Ernest Kerr** of Harviestoun, Dollar.
James R. Lumsden of Arden, Dumbartonshire.
James M'Laren, Cornton, Stirling.
J. T. **M'Laren**, The Leuchold, Dalmeny House, Edinburgh.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
G. **Bertram Shields**, Dolphingstone, Tranent.
Falconer L. Wallace of Candacraig and Balcairn, Strathdon.
Sir **Hugh Shaw Stewart** of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip, Hon. Secretary, *ex officio.*
William Home Cook, C.A., Auditor, *ex officio.*

3. PUBLICATIONS.

Lieut.-Col. W. T. R. **Houldsworth** of Kirkbride, Maybole, *Convener.*
Thomas A. Buttar, Corston, Coupar-Angus.
Colonel F. J. **Carruthers** of Dormont, Lockerbie.
Alexander Forbes, Rettie, Banff.
Athole S. Hay of Marlefield, Roxburgh.
William Low of Balmakewan, Marykirk, Montrose.
James R. Lumsden of Arden, Dumbartonshire.
J. T. **M'Laren**, The Leuchold, Dalmeny House, Edinburgh.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
Dr **Thomas G. Nasmyth**, Canaan Lodge, 43 Canaan Lane, Edinburgh.
G. **Bertram Shields**, Dolphingstone, Tranent.
John Speir, Newton Farm, Hallside, Glasgow.
Falconer L. Wallace of Candacraig and Balcairn, Strathdon.
George Will, The Farm, Crichton Royal Institution, Dumfries.
Sir **David Wilson**, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio.*
Sir **Hugh Shaw Stewart** of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip, Hon. Secretary, *ex officio.*

4. SHOWS.

John Elliot, Balnakiel, Galashiels, *Convener*.
J. T. M'Laren, The Leuchold, Dalmeny House, Edinburgh, *Vice-Convener*.
Harry Armour, J.P., Niddry Mains, Winchburgh.
Thomas A. Buttar, Corston, Coupar-Angus.
Colonel F. J. Carruthers of Dormont, Lockerbie.
George W. Constable, Traquair Estate Office, Innerleithen.
The Hon. T. G. P. Corbett, Rowallan, Kilmarnock.
Gilbert Davidson, Burnfoot, Hawick.
Thomas Elder of Stevenson, Haddington.
The Earl of Elgin and Kincardine, C.M.G., Broomhall, Dunfermline.
Thomas Elliot, Sciberscross, Rogart.
William Elliot, Muirglen, Lanark.
Alexander Forbes, Rettie, Banff.
W. P. Gilmour, Balmangan, Kirkcudbright.
Alexander P. Gordon of Bindal, Portmahomack.
Peter Grant, The Hotel, Carr-Bridge, Strathspey.
James Gray, Birkenwood, Kippen Station.
Athole S. Hay of Marlefield, Roxburgh.
Lieut.-Col. W. T. R. Houldsworth of Kirkbride, Maybole.
A. Thornton Hunter (Alexander Jack & Sons Ltd.), Maybole.
William C. Hunter of Arngask, Glenfarg.
David S. Hutcheson, Broomhill, Melrose.
J. Ernest Kerr of Harviestoun, Dollar.
Hugh M. Leadbetter of Knowesouth, Jedburgh.
William Low of Balmakewan, Marykirk, Montrose.
James R. Lumsden of Arden, Dumbartonshire.
James M'Clean, Craigmount, Portpatrick.
Captain John MacGillivray of Calrossie, Nigg, Ross-shire.
Duncan M'Laren of Fairnington, Roxburgh.
James M'Laren, Cornton, Stirling.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
James M'Queen of Crofts, Dalbeattie.
Arthur Middlemas, Provost of Kelso.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
Dr Thomas G. Nasmyth, Canaan Lodge, 43 Canaan Lane, Edinburgh.
William S. Niven, The Loan, Errol.
The Master of Polwarth, Harden, Hawick.
Alfred H. Reid, Hillhead, Ellon.
James Roberton, Morebattle Tofts, Kelso.
Alexander Robertson, Estate Office, Polmaise, Stirling.
James Rodger, Rockdale Lodge, Bridge of Allan.
Major Robert W. Sharpe of The Park, Earlston.
G. Bertram Shields, Dolphingstone, Tranent.
John P. Sleigh of St John's Wells, Fyvie.
J. R. C. Smith, Mowhaugh, Kelso.
John Speir, Newton Farm, Hallside, Glasgow.
A. A. Hagart Speirs of Elderslie, Houston House, Houston.
Major Mark Sprot of Riddell, Lilliesleaf.
John Stewart of Struthers, J.P., Woodburne House, Ceres, Fife.
J. P. Ross Taylor, Mungoswalls, Duns.
Falconer L. Wallace of Candacraig and Balcairn, Strathdon.
George Will, The Farm, Crichton Royal Institution, Dumfries.
Sir David Wilson, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio*.
Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip, Hon. Secretary, *ex officio*.
Professor R. Stanfield, 24 Mayfield Gardens, Edinburgh, Engineer, *ex officio*.

5. IMPLEMENTS AND MACHINERY.

G. Bertram Shields, Dolphingstone, Tranent, *Convener.*
George Will, The Farm, Crichton Royal Institution, Dumfries, *Vice-Convener.*
Harry Armour, J.P., Niddry Mains, Winchburgh.
Colonel F. J. Carruthers of Dormont, Lockerbie.
Gilbert Davidson, Burnfoot, Hawick.
Thomas Elder of Stevenson, Haddington.
Alexander Forbes, Rettie, Banff.
W. P. Gilmour, Balmangan, Kirkcudbright.
A. Thornton Hunter (Alexander Jack & Sons, Ltd.), Maybole.
William Low of Balmakewan, Marykirk, Montrose.
James R. Lumsden of Arden, Dumbartonshire.
Duncan M'Laren of Fairnington, Roxburgh.
James M'Laren, Cornton, Stirling.
J. T. M'Laren, The Leuchold, Dalmeny House, Edinburgh.
William S. Niven, The Loan, Errol.
James Roberton, Morebattle Tofts, Kelso.
James Rodger, Rockdale Lodge, Bridge of Allan.
Major Robert W. Sharpe of The Park, Earlston.
John P. Sleigh of St John's Wells, Fyvie.
John Speir, Newton Farm, Hallside, Glasgow.
Major Mark Sprot of Riddell, Lilliesleaf.
John Stewart of Struthers, J.P., Woodburne House, Ceres, Fife.
Sir David Wilson, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio.*
Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip, Hon. Secretary, *ex officio.*
Professor Stanfield, 24 Mayfield Gardens, Edinburgh, Engineer, *ex officio.*

6. SCIENCE.

Sir David Wilson, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *Convener.*
J. T. M'Laren, The Leuchold, Dalmeny House, Edinburgh, *Vice-Convener.*
Harry Armour, J.P., Niddry Mains, Winchburgh.
Thomas A. Buttar, Corston, Coupar-Angus.
The Hon. T. G. P. Corbett, Rowallan, Kilmarnock.
The Earl of Elgin and Kincardine, C.M.G., Broomhall, Dunfermline.
Thomas Elliot, Sciberscross, Rogart.
William Elliot, Muirglen, Lanark.
Alexander Forbes, Rettie, Banff.
W. P. Gilmour, Balmangan, Kirkcudbright.
Peter Grant, The Hotel, Carr-Bridge, Strathspey.
Athole S. Hay of Marlefield, Roxburgh.
Lieut.-Col. W. T. R. Houldsworth of Kirkbride, Maybole.
William C. Hunter of Arngask, Glenfarg.
J. Ernest Kerr of Harviestoun, Dollar.
William Low of Balmakewan, Marykirk, Montrose.
James R. Lumsden of Arden, Dumbartonshire.
James M'Clean, Craigmount, Portpatrick.
Captain John MacGillivray of Calrossie, Nigg, Ross-shire.
Duncan M'Laren of Fairnington, Roxburgh.
James M'Laren, Cornton, Stirling.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
James M'Queen of Crofts, Dalbeattie.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
Dr Thomas G. Nasmyth, Canaan Lodge, 43 Canaan Lane, Edinburgh.
The Master of Polwarth, Harden, Hawick.
Alfred H. Reid, Hillhead, Ellon.
Alexander Robertson, Estates Office, Polmaise, Stirling.

Major **Robert** W. **Sharpe** of The Park, Earlston.
G. **Bertram Shields**, Dolphingstone, Tranent.
John Speir, Newton Farm, Hallside, Glasgow.
A. A. **Hagart Speirs** of Elderslie, Houston House, Houston.
Major **Mark Sprot** of Riddell, Lilliesleaf.
John Stewart of Struthers, J.P., Woodburne House, Ceres, Fife.
Falconer L. **Wallace** of Candacraig and Balcairn, Strathdon.
Sir **Hugh Shaw Stewart** of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip, Hon. Secretary, *ex officio.*
Colonel F. J. **Carruthers** of Dormont, Lockerbie, Chairman, *ex officio.*
Dr J. F. **Tocher**, 41½ Union Street, Aberdeen, Chemist, *ex officio.*
R. S. **MacDougall**, M.A., D.Sc., 9 Dryden Place, Edinburgh, Zoologist, *ex officio.*

7. GENERAL PURPOSES.

Colonel F. J. **Carruthers** of Dormont, Lockerbie, Chairman, *Convener.*
Harry Armour, Niddry Mains, Winchburgh.
Thomas Elder of Stevenson, Haddington.
John Elliot, Balnakiel, Galashiels.
William Elliot, Muirglen, Lanark.
James Gray, Birkenwood, Kippen Station.
William C. **Hunter** of Arngask, Glenfarg.
James M'Laren, Cornton, Stirling.
J. T. **M'Laren**, The Leuchold, Dalmeny House, Edinburgh.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
James M'Queen of Crofts, Dalbeattie.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
Dr **Thomas** G. **Nasmyth**, Canaan Lodge, 43 Canaan Lane, Edinburgh.
G. **Bertram Shields**, Dolphingstone, Tranent.
Sir **David Wilson**, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio.*
Sir **Hugh Shaw Stewart** of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip, Hon. Secretary, *ex officio.*

8. EDUCATION.

Colonel F. J. **Carruthers** of Dormont, Lockerbie, *Convener.*
J. T. **M'Laren**, The Leuchold, Dalmeny House, Edinburgh.
G. **Bertram Shields**, Dolphingstone, Tranent.
Sir **Hugh Shaw Stewart** of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip.
Sir **David Wilson**, Bart., D.Sc., of Carbeth, Killearn.
John Stirton, *Secretary*, Highland and Agricultural Society.

9. FORESTRY.

Sir **Hugh Shaw Stewart** of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip, Hon. Secretary, *Convener.*
The **Duke of Atholl**, K.T., G.C.V.O., C.B., D.S.O., Blair Castle, Blair-Atholl.
Colonel F. J. **Carruthers** of Dormont, Lockerbie.
James I. **Davidson**, Saughton Mains, Corstorphine.
The **Earl of Elgin and Kincardine**, C.M.G., Broomhall, Dunfermline.
Sir **John** R. **Findlay** of Aberlour, 27 Drumsheugh Gardens, Edinburgh.
Walter Stewart Fothringham of Fothringham and Murthly, Murthly Castle, Perth.
Lord Forteviot, Dupplin Castle, Perth.
Colonel Sir **John Gilmour**, Bart., M.P., D.S.O., of Montrave, Leven.
The **Earl of Home**, Springhill, Coldstream.

J. H. MILNE HOME, Irvine House, Canonbie.
JAMES R. LUMSDEN of Arden, Dumbartonshire.
A. D. MACDONALD, Lennel, Coldstream.
Sir KENNETH MACKENZIE of Gairloch, Bart., Conan House, Conon Bridge, Ross-shire.
MACLACHLAN OF MACLACHLAN, Castle Lachlan, Strachur.
J. T. M'LAREN, The Leuchold, Dalmeny House, Edinburgh.
JAMES M'QUEEN of Crofts, Dalbeattie.
The Right Hon. Sir HERBERT E. MAXWELL of Monreith, Bart., Whauphill.
LORD POLWARTH, Humbie House, Upper Keith.
JAMES RODGER, Rockdale Lodge, Bridge of Allan.
A. A. HAGART SPEIRS of Elderslie, Houston House, Houston.
Major MARK SPROT of Riddell, Lilliesleaf.
The EARL OF STAIR, D.S.O., Lochinch, Castle Kennedy.
Brig.-General ARCHIBALD STIRLING of Keir, Dunblane.
Sir JOHN MAXWELL STIRLING MAXWELL of Pollok, Bart., Pollok House, Pollokshaws.
Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio.*

10. OFFICE-BEARERS.

Constitution: (1) The four Ordinary Directors for the district in which the Show for the year is to be held (with the exception of one retiring next year); (2) one Ordinary Director from each of the other Show districts; and (3) the Chairman of the Board, Hon. Secretary, and Treasurer, *ex officiis.*

Edinburgh	THOMAS ELDER of Stevenson, Haddington. HARRY ARMOUR, J.P., Niddry Mains, Winchburgh. Dr THOMAS G. NASMYTH, Canaan Lodge, 43 Canaan Lane, Edinburgh.
Aberdeen .	ALEXANDER FORBES, Rettie, Banff.
Stirling .	J. ERNEST KERR of Harviestoun, Dollar.
Dumfries .	ROBERT MACMILLAN of Holm of Dalquhairn, Moniaive.
Inverness .	THOMAS ELLIOT, Sciberscross, Rogart.
Perth . .	The EARL OF ELGIN AND KINCARDINE, C.M.G., Broomhall, Dunfermline.
Glasgow .	A. A. HAGART SPEIRS of Elderslie, Houston House, Houston.
Borders .	Major ROBERT W. SHARPE of The Park, Earlston.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, Chairman, *ex officio.*
Sir HUGH SHAW STEWART of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip, Hon. Secretary, *ex officio.*
Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn, Treasurer, *ex officio.*

REPRESENTATIVES ON OTHER BODIES.

National Agricultural Examination Board.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
J. T. M'LAREN, The Leuchold, Dalmeny House, Edinburgh.
G. BERTRAM SHIELDS, Dolphingstone, Tranent.
Sir HUGH SHAW STEWART of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip.
Sir DAVID WILSON, Bart., D.Sc., of Carbeth, Killearn.
JOHN STIRTON, *Secretary,* Highland and Agricultural Society.

Edinburgh and East of Scotland College of Agriculture.

JOHN STIRTON, *Secretary,* Highland and Agricultural Society.

West of Scotland Agricultural College.

Sir HUGH SHAW STEWART of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip.

Aberdeen and North of Scotland College of Agriculture.

Dr J. F. Tocher, 41½ Union Street, Aberdeen.

Royal (Dick) Veterinary College.

Dr Thomas G. Nasmyth, Canaan Lodge, 43 Canaan Lane, Edinburgh.

Glasgow Veterinary College.

James R. Lumsden of Arden, Dumbartonshire.

Scottish Milk Records Association.

W. P. Gilmour, Balmangan, Kirkcudbright.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B., Ardgowan, Inverkip.

SCOTTISH PLANT REGISTRATION STATION.

Standing Committee of Management.

Sir David Wilson, Bart., D.Sc., of Carbeth, Killearn.	*Appointed for* 5 *years from* 1*st January* 1926.
James Elder, Athelstaneford Mains, Drem.	
G. Bertram Shields, Dolphingstone, Tranent.	

MEETINGS.

General Meetings.—By the Charter the Society must hold two General Meetings each year, and, under ordinary circumstances, they are held in the months of January and June, in the Society's Hall, 3 George IV. Bridge, for the election of Members and other business. Twenty a quorum.

By a resolution of the General Meeting on 15th January 1879, a General Meeting of Members is held in the Showyard on the occasion of the Annual Show. This year it will be held at Kelso, on Wednesday, 30th June, at an hour to be announced in the programme of the Show.

With reference to motions at General Meetings, Bye-Law No. 10 provides—"That at General Meetings of the Society no motion or proposal (except of mere form or courtesy) shall be submitted or entertained for immediate decision unless notice thereof has been given a week previously to the Board of Directors, without prejudice, however, to the competency of making such motion or proposal to the effect of its being remitted to the Directors for consideration, and thereafter being disposed of at a future General Meeting."

General Show at Kelso.—29th, 30th June, 1st and 2nd July.—Entries close for Implements, 12th April; Stock, Poultry, Dairy Produce, &c., 6th May; Rabbits and Honey, 27th May.

Directors' Meetings.—The Board of Directors meet (except when otherwise arranged) on the first Wednesday of each month from November till June inclusive, at half-past one o'clock P.M., and occasionally as business may require, on a requisition by three Directors to the Secretary, or on intimation by him. Seven a quorum.

Committee Meetings.—Meetings of the various Committees are held as required.

Nomination of Directors.—Meetings of Members, for the purpose of nominating Directors to represent the Show Divisions on the Board for the year 1927-1928, will be held at the places and on the days after mentioned:—

1. Edinburgh, Market Buildings, Gorgie,	Wed., 26th Jan. 1927, at 1.
2. Glasgow, North British Railway Hotel,	Wed., 9th Feb. 1927, at 1.
3. Stirling, Golden Lion Hotel, . .	Thur., 10th Feb. 1927, at 1.30.
4. Cupar, County Buildings, . . .	Tues., 15th Feb. 1927, at 2.
(*In* 1928 *and* 1929 *the Meetings will be held at Perth; in* 1930 *at Cupar.*)	
5. Border, Railway Hotel, St Boswells, .	Thur., 17th Feb. 1927, at 1.
6. Aberdeen, Imperial Hotel, . . .	Fri., 25th Feb. 1927, at 2.30.
7. Inverness, Station Hotel, . . .	Tues., 1st Mar. 1927, at 12.30.
8. Dumfries, King's Arms Hotel, . .	Wed., 9th Mar. 1927, at 1.30.

The nomination of Proprietor or other Member paying the higher subscription must be made in the 1st, 2nd, 4th, and 5th Divisions; and the nomination of Tenant-Farmer or other Member paying the lower subscription, in the 3rd, 6th, 7th, and 8th Divisions.

Retiring Directors are not eligible for re-election until after the lapse of at least one year.

EXAMINATIONS.

Agriculture.—The Examination for 1926 for the National Diploma in Agriculture will be held at the University, Leeds, on Wednesday, 7th April 1926, and following days. Entries close on 22nd February.

Dairy.—The Examination for 1926 for the National Diploma in Dairying will be held at the Dairy School, Kilmarnock, on Friday, 17th September 1926, and following days. Entries close on 7th August.

Forestry.—The Examination for the Society's Certificates in Forestry will be held at 3 George IV. Bridge, Edinburgh, in the month of March 1927.

AGRICULTURAL EDUCATION

By a Supplementary Charter under the Great Seal, granted in 1856, the Society is empowered to grant Diplomas.

From 1858 to 1899 the Society held an annual Examination for Certificate and Diploma in Agriculture. In 1872 the Free Life Membership of the Society was granted to winners of the Diploma. In 1884 permission was given to holders of the Diploma to append the letters F.H.A.S. to their names.

In 1898 it was resolved by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland to discontinue the independent Examinations in Agriculture held by the two Societies, and to institute in their stead a Joint-Examination for a NATIONAL DIPLOMA IN AGRICULTURE (N.D.A.) This Examination is now conducted under the management of the "National Agricultural Examination Board" appointed by the two Societies. In the year 1903, on the invitation of the two Societies, the Ministry of Agriculture and Fisheries and the Scottish Education Department agreed to appoint a representative from each to act on the Examination Board. Sir Daniel Hall, K.C.B., represents the former, and the late Sir John Struthers, K.C.B., represented the latter body up till 1921, and thereafter continued as a co-opted member of the Board till his death in 1925. In 1921 the Board of Agriculture for Scotland was invited to appoint a representative, and has since that date been represented by Sir Robert B. Greig, M.C., LL.D.

REGULATIONS FOR EXAMINATION IN THE SCIENCE AND PRACTICE OF AGRICULTURE

1. The Societies may hold conjointly, under the management of the National Agricultural Examination Board appointed by them, an Annual Examination in the Science and Practice of Agriculture, at a convenient centre.

2. Candidates who pass the Examination will receive the National Diploma in Agriculture—the Diploma to be distinguished shortly by the letters "N.D.A."

3. The Examination will be conducted by means of written papers and oral examinations.

4. In order to be eligible to sit for the Board's Examination in Agriculture, a candidate must—

(a) Present a certificate from a recognised Agricultural College that his attainments in the subjects of *General Botany*, *Geology*, *General Chemistry*, *Physics*, *and Mechanics*, as attested by class and other examinations, are, in the opinion of the authorities of the College, such as to justify his admission to the Board's Examination ; *or*

(b) Produce evidence that he has passed the 1st B.Sc. or the Intermediate Examination in Science of a British University ; *or* (*c*) Present a Senior Certificate obtained at the Local Examinations of the Universities of Oxford or Cambridge, and produce evidence that he has continued his study of science for at least a year, and has obtained a certificate in Subject 3 (*a*) Elementary Chemistry and Physics, (*b*) Botany of Group H of the Oxford Higher Local Examination, *or* in Subjects 1, Elementary Chemistry and Physics, and 4, Botany of Group E of the Cambridge Higher Local Examination ; *or*

(*d*) Present an Intermediate Leaving Certificate of the Scottish Education Department, and produce evidence that he has continued his studies for at least another year and has obtained the Higher Leaving Certificate in Science (including Chemistry and Botany).

5. In the case of students who satisfy the Board that they have not had the facilities for obtaining the foregoing certificates, the Board will be prepared to consider evidence of equivalent attainment. [Applications under this rule must be lodged *three months* before the date of the annual examination.]

6. *Before sitting for the* PRACTICAL AGRICULTURE *and* FARM MACHINERY AND IMPLEMENTS *papers, all candidates must produce evidence of possessing a practical knowledge of Agriculture obtained by residence on a farm for a period or periods (not more than two) covering a complete year of farming operations.*

7. Candidates will have the option of taking the whole of the following nine papers at one time, or of sitting for a group of any three, four, or five in one year and the remaining subjects within the next two years :—

SUBJECT.	Maximum Marks.	Pass Marks
1. Practical Agriculture (First Paper)	400	240
2. Practical Agriculture (Second Paper)	400	240
3. Farm Machinery and Implements	300	150
4. Land Surveying and Farm Buildings	100	50
5. Agricultural Chemistry	200	100
6. Agricultural Botany	200	100
7. Agricultural Book-keeping	200	100
8. Agricultural Zoology	100	50
9. Veterinary Science and Hygiene	200	100
	2100	1130

NOTE.—Candidates taking the Examination in two Groups of subjects are recommended to take Agricultural Chemistry and Agricultural Botany in the first group.

8. A candidate who obtains not less than three-fourths (1575) of the aggregate maximum marks (2100) in the entire Examination will receive the Diploma with Honours, provided that he obtains not less than three-fourths (600) of the maximum marks (800) in the two Practical Agriculture papers.

9. Candidates electing to take the entire Examination at one time and failing in not more than three subjects may appear for these subjects in the following year. Failure in more than three subjects will be regarded as failure in the whole Examination.

10. In the case of candidates electing to take the Examination papers in two groups—

(*a*) A candidate appearing for a group of *three* subjects and failing in a single subject may appear for that subject in the following year. Failure in more than one subject will be regarded as failure in the group.

(*b*) A candidate appearing for a group of four, five, or six subjects, and failing in not more than two subjects, may appear for those subjects in the following year. Failure in more than two subjects will be regarded as failure in the group.

11. Non-returnable fees must be paid by candidates as follows:—

Entire Examination	Six guineas.
Group of Subjects	Three guineas.
Reappearance for any Subjects . .	10/6 per Subject.

12. The Board reserve the right to postpone, abandon, or in any way, or at any time, modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

The Examination will take place at the Leeds University on WEDNESDAY, APRIL 7th, 1926, and following days.

Forms of application for permission to sit at the Examination may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C. 1," or from "The Secretary, Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh," and must be returned duly filled up not later than MONDAY, FEBRUARY 22nd, 1926, when the Entries will close.

16 BEDFORD SQUARE, LONDON, W.C. 1,
December 1925.

SYLLABUS OF SUBJECTS OF EXAMINATION

PRACTICAL AGRICULTURE.

I.—FIRST PAPER.

1. *British Farming.*—Arable, stock-raising, dairying—Approximate areas covered by the different systems—Typical examples of each—Area in Great Britain under chief crops—Numbers of live stock—The recent history of agriculture—Short summary of agricultural returns.

2. *Climate.*—The effect of climate on farming practice—Rainfall—Temperature—Prevailing winds—Weather forecasts.

3. *Soils.*—The influence of geological formations on the systems of farming—Classification of soils—Character and composition—Suitability for cultivation—Reclamation—Drainage—Irrigation—Warping—Application of lime and marl—Bare fallows—Tillage—Subsoiling—Deep and thorough cultivation.

4. *Manures.*—The manures of the farm—The treatment of farmyard manure—The disposal of liquid manure and sewage—General manures—Special manures—Field trials of manures—The application of manures—Period of application and amounts used per acre—Unexhausted value of manures and feeding-stuffs.

5. *Crops.*—Wheat, barley, oats, rye, beans, peas, potatoes, turnips, swedes, mangolds, forage plants, hops, and other crops—Their adaptation to different soils and climates—Varieties—Selection of seed—Judging seeds—Cultivation, weeds and parasitic plants, best methods of prevention and eradication—Harvesting—Storing—Cost of production—Improvement of crops by selection and hybridising—Field trials—Methods which the farmer may adopt—Selection to resist disease—The principles of rotations—Rotations suitable for different soils and climates—Rotations and the maintenance of fertility—Green manuring—Leguminous crops in rotation—Catch crops—The advantages and disadvantages of rotations—Specialised farming—Management of Orchards.

II.—SECOND PAPER.

6. *Live Stock.*—The different breeds of British live stock—Their origin, characteristics, and comparative merits—Suitability for different districts—Breeding—General principles—Selection—Mating—Crossing—Rearing and general management—Breeding and rearing of horses, cattle, sheep, pigs, and poultry—Rearing colts and raising store stock—The foods of the farm—Their composition and suitability for different classes of stock—Purchased foods—Composition and special value—Rations for different kinds and ages of stock—Cost of producing beef, mutton, pork, and milk—Cost of feeding farm horses.

7. *The disposal of Crop, Produce, and Stock.*—Marketing grain and other crops—Sale of stock—Live weight—Dead weight.

8. *Milk.*—The production and treatment of milk—The manufacture of cheese, butter, &c.—The utilisation of by-products.

9. *Farming Capital.*—Calculations of the stocking and working of arable, stock, and dairy farms—Farm valuations—Rent and taxes.

10. *Labour.*—Organisation of labour—piece-work, time-work—labour costings.

11. *Renting a Farm.*—Indications of condition, productive power, and stock-carrying capacity—Leases—Conditions of occupancy.

N.B.—*It is essential that a candidate know his subject practically, and that he satisfy the Examiner of his familiarity with farm work and management.*

III.—FARM MACHINERY AND IMPLEMENTS.

1. *Power.*—The principle of action, construction, method of working, also care and management of steam engines and boilers, gas, oil and petrol engines and agricultural tractors—Cost and working expenses in connection with the above—Estimation of the brake horse-power of engines—Power derived from water—Measurement of the quantity of water flowing in a stream—General arrangement of water-power plants—Water-wheels—Turbines—Pumps, principle of action and construction—Flow of water through pipes—Hydraulic ram—Windmills.

2. *Agricultural Implements and Machinery.*—The mode of action and the general principles involved in the construction and working of farm implements and machinery—Arrangement of machinery with respect to the power plant—Pulleys and belting—Shafting and bearings—Lubrication—Lifting appliances—Strength and care of chains—Concrete and its use in the construction of simple foundations for engines and machines.

3. *Implements of Cultivation.* — Ploughs — Cultivators — Grubbers—Harrows—Drills—Manure Distributors—Seeding and planting implements.

4. *Implements of Harvesting.*—Mowing and Reaping machines—Rakes—Tedders—Elevators—Potato raisers.

5. *Implements of Transit.*—Carts, waggons, rick lifters, tractors.

6. *Threshing and Food-preparing Machinery.* — Threshing machines, stationary and portable, Screen Winnowers—Hummelers, Chaff cutters—Pulpers—Cake breakers.

7. *Dairy Appliances.*—Milking machines—Cream separators—Churns and other butter-working appliances—Milk delivery cans—Cheese-making utensils—Vats and presses.

N.B.—*Candidates are expected to have had some experience with agricultural machinery and implements under actual working conditions, and to be capable of illustrating their answers, when necessary, by intelligible sketches or diagrams.*

IV.—LAND SURVEYING AND FARM BUILDINGS.

1. The use and adjustment of instruments employed in Surveying and Levelling other than the Theodolite.

2. Land surveying by chain—Plotting from field book, and determination of areas surveyed—The simpler "field problems."

3. Levelling and plotting from field book.

4. A knowledge of the various classes of maps published by the Ordnance Survey Department and their Scales.

5. *Roads and Fences.*—The construction and maintenance of farm roads, fences, and ditches.

6. *Land Drainage.*—Methods of draining; mole and pipe drains; cost of construction and maintenance.

7. *Buildings.*—Buildings required on different classes of farms—Economical arrangement of farm buildings—Materials—Construction—Ventilation—Drainage—Water supply—Dimensions of dairy, stables, cowsheds, yard, courts, and piggeries—Accommodation for power—Implement, machinery, and cart sheds—Hay and grain sheds—Shelter sheds—Storage of manure.

N.B.—*Each candidate should have with him at the Examination a pair of compasses, scales of equal parts, including scales of one chain to the inch,* 4 *feet to the inch,* 8 *feet to the inch, and the scale fitting the Ordnance map,* $\frac{1}{2500}$ *or* 25·344 *inches to the mile, a small protractor, a set square, and a straight-edge about* 18 *inches in length.*

V.—AGRICULTURAL CHEMISTRY.

1. *The Atmosphere.*—Its composition and relations to plant and animal life.

2. *Water.*—Rain water—Soil water and drainage—Drinking water—Sewage and irrigation.

3. *The Soil.*—Origin, formation, and classification of soils—Sampling—Analysis—Composition of soils—The chemical and physical properties of soils—The water and air of the soil—Biological changes in the soil—The soil in relation to plant growth—Fertility—Causes of infertility—Improvement of soils.

4. *Manures.*—Theories of manuring—Classification of manures—Origin, nature, and characteristics of manures—Manufacture of manures—Composition, analysis, adulteration, and valuation of manures—Farmyard manure and other natural manures—Green-manuring—Liming, marling, claying—Artificial manures, their origin and manufacture—Fertilisers and Feeding Stuffs Act—Sampling of manures.

5. *Poisons, Antiseptics, and Preservatives.*—General chemical composition and character of insecticides, fungicides, antiseptics, and preservatives used on the farm.

6. *Plants and Crops.*—Constituents of plants—Assimilation and nutrition of plants—Sources of the nitrogen and other constituents of plants—Germination—Action of enzymes—Composition and manurial requirements of farm crops—Food products derived from crops—Manuring experiments.

7. *Animals.*—Composition of animal body—Animal nutrition—Digestion—Assimilation, metabolism, respiration, and excretion.

8. *Foods and Feeding.*—Constituents of foods—Origin, nature, and composition of chief feeding-stuffs—Sampling, analysis, and adulteration of foods—Nutritive value and digestibility of food—Functions of chief

food constituents—Energy values—Vitamines—Relation of foods to the production of work, meat, milk, and manure—Manurial residues of foods.

9. *Dairy Chemistry.*—The composition of milk, cream, butter, cheese, &c.—Conditions which influence the composition of milk and milk products—Action of ferments and enzymes on milk and milk products—Milk-testing—Analysis and adulteration of dairy products.

N.B.—*Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.*

VI.—AGRICULTURAL BOTANY.

In addition to a *general knowledge* of the morphology, histology, and physiology of plants, candidates will be expected to possess a *detailed knowledge* of the following subjects:—

British grasses of agricultural importance: recognition of, at any stage of growth. Habitats of important species. Constitution of the grass flora of good meadows and pastures. Composition of seed mixtures for temporary and permanent leys on various soils. The effects of artificial manures on the flora of grass land.

The weeds of arable and grass land. Poisonous and parasitic weeds. Methods of distribution by seed and vegetatively: of eradication. Weeds as soil indicators. Recognition of the seeds of the common weeds, particularly those characteristically found in clover, grass, &c., seed.

The chief varieties of wheat, barley, oats, clovers, roots, and other farm crops: their suitability for various climatic and soil conditions. The identification of the more important types of cereals by means of their grain characters. Characteristics of good and bad samples of cereals.

Identification of materials used in feeding cakes and meals.

Plant-breeding. Principles of heredity in plants. Pure lines. Fluctuating variability. Selection.

Disease in plants. Diseases due to the attacks of parasitic fungi. Resistance to disease: conditions affecting. Fungoid diseases scheduled from time to time by the Ministry of Agriculture and Fisheries.

Yeasts and fermentation.

The general outlines of bacteriology: nitrogen fixation, nitrification, and denitrification. Putrefaction and the bacteriology of milk, butter, and cheese.

VII.—AGRICULTURAL BOOK-KEEPING.

Principles of book-keeping; single and double entry; opening books, description of subsidiary books, with examples of entries therein; the ledger; posting; preparation of trial balance; valuation of stocks and effects; closing and proving the books, preparation of profit and loss account and balance-sheet; ruling off accounts.

Application of special methods to farms of varying requirements.

The following Revised Syllabus will come into force for the Examination of 1927.

1. Advantages of book-keeping to the farmer. Difficulties and how they can be overcome. Objects of book-keeping.

2. General principles of book-keeping. Double-entry system. Description and use of various books. Ledger, journal, cash-book, petty cash-book, day-books, &c. Entering transactions; posting; trial balance; closing the accounts. Single-entry system.

3. Special ledger accounts: Interest, depreciation, rent and rates, improvements, private and household expenses, profit and loss, and capital; partnership accounts.

4. Bank business. Opening a bank account. Use of cheques. Deposits and overdrafts.

5. General office work; correspondence, order notes, invoices, rendering accounts, receipts, &c. Filing systems.

6. Farm valuations for book-keeping purposes. Dates for stock-taking and principles of valuation. The farm balance-sheet.

7. Systems of farm book-keeping. Conditions that determine the most suitable system. Advantages and drawbacks of each system.

8. Accounts for the owner-occupier. Treatment of rent. Incidence of rates and tithe in England and Scotland, and their treatment as between farm and estate accounts. Improvements and upkeep and the general principles relating to maintenance claims.

9. Cost accounting. General principles and methods. Advantages, objects, difficulties.

10. Interpretation of results from ordinary and from cost accounts. Precautions necessary. Use of accounts as a guide to efficient management.

11. Income Tax. How the farmer is assessed. Preparation of Income Tax return. Treatment of Income Tax in accounts.

VIII.—AGRICULTURAL ZOOLOGY.

1. The part played by common animals in helping or hindering agricultural operations, as illustrated by moles and voles, insectivorous and other birds, snails and slugs, useful and injurious insects, arachnids and myriapods, earthworms, &c.

2. *General Structure of Insects*, especially the external characters.

3. *Life-history of Insects.*—Economic importance of different stages. A knowledge of the life-history of the principal insect pests as affording a basis for appropriate treatment.

4. *Acarina* injurious to Food Crops and Live Stock.

5. *Parasitic Worms.*—Flukes, Tapeworms, and Threadworms.

6. *Preventives and Remedial Measures* in regard to insects, acarines, and worm parasites—*e.g.*, farm practice in relation to the discouragement of insect attack. Encouragement of insect-eating birds and mammals. Artificial remedies. Insecticides. Treatment for parasites.

N.B.—*Practical acquaintance with common animals, especially insects and worm parasites, will be expected. Where the candidate is not acquainted with the scientific name of an animal, the generally received English name will be accepted.*

Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.

IX.—VETERINARY SCIENCE AND HYGIENE.

1. Elementary anatomy and physiology of the horse, ox, sheep, and pig, and their relation to unsoundness and disease.

2. The general principles of breeding—including the physiology of reproduction, the laws of heredity, the periods of gestation, and the signs of pregnancy in the mare, cow, ewe, and sow.

3. Dentition as a means of determining the age of horses, cattle, sheep and swine.

4. The management of farm stock in health and disease.

The following won the Diploma in 1925:—

Diploma, with Honours.

1st. Harry Oates Hirst, University of Leeds.
2nd. John Hainstock Anderson, University of Leeds.

Diploma.

Stephen Barratt, University of Leeds.
Alexander John Bean, University of Aberdeen.
Joseph Broadhurst, Midland Agricultural College, Sutton Bonington, Loughborough.
Wilfrid James Bryan, Harper Adams Agricultural College, Newport, Shropshire.
Neel Corderoy, Seale Hayne Agricultural College, Newton Abbot, Devon.
James Alan Craig, West of Scotland Agricultural College, Glasgow.
John Robertson Currie, University of Glasgow and West of Scotland Agricultural College.
George Feuffel, West of Scotland Agricultural College.
Major Thomas Foster, D.S.O., Park View, Combermere, Whitchurch, Shropshire.
Gerald E. N. Furse, Seale Hayne Agricultural College.
John Gibb, West of Scotland Agricultural College.
James Joseph Glavin, Royal College of Science, Dublin.
Frances Janet Glegg, East of Scotland Agricultural College, Edinburgh.
Charles Roy Greenwood, Harper Adams Agricultural College.
Harold Slater Haigh, University of Leeds.
Bernard James Haimes, Seale Hayne Agricultural College.
Donald Horner, Seale Hayne Agricultural College.
John Everard Hosking, Seale Hayne Agricultural College.
John Boag Houston, West of Scotland Agricultural College.
Albert David Imper, University of Aberdeen.
Reginald Alfred Jeffery, Midland Agricultural College.
Dorothy Kenyon, University College of Wales, Aberystwyth.
Vida Helen Lamb, West of Scotland Agricultural College.
John Rial Lee, University of Leeds.
George Winslow Lock, Midland Agricultural College.
Leonard Thornton Lowe, School of Agriculture, Reaseheath, Nantwich.
Joseph McClemont, University of Glasgow and West of Scotland Agricultural College.
Hugh McCrae, University of Glasgow.
William Alexander McGeoch, West of Scotland Agricultural College.
Alexander McGibbon, University of Glasgow and West of Scotland Agricultural College.
Sam Morris Makings, Midland Agricultural College.
Agnes Adam Meikle, West of Scotland Agricultural College.
Cyril Sharman Morris, Seale Hayne Agricultural College.
James Morrison, University of Aberdeen.
Robert Struthers Reid, West of Scotland Agricultural College.
David Robertson, University of Aberdeen.

William Bird Robson, Armstrong College, Newcastle-on-Tyne.
Donald Rowe, University College, Reading.
Thomas Ronald Shaxson, Seale Hayne Agricultural College.
Margaret May Speedy, East of Scotland Agricultural College.
Janet Lambie Stewart, West of Scotland Agricultural College.
Agnes B. Thornley, West of Scotland Agricultural College.
Sidney Stanley Joe Travers, S.E. Agricultural College, Wye, Kent.
Walter Weir, University of Glasgow and West of Scotland Agricultural College.
Charles Harrower Westwater, University of Glasgow.
Allen Heywood Wilson, Midland Agricultural College.
Herbert Wooton, University of Leeds.
Maurice Charles Wright, West of Scotland Agricultural College.
Archibald Dougall Wyllie, West of Scotland Agricultural College.

Examination Papers of Past Years.

Copies of the Papers set at the Annual Examination for the National Diploma in the Science and Practice of Agriculture held in 1925 may be had upon application. Price 6d. per set.

VETERINARY DEPARTMENT

The Society established a Veterinary Department in 1823, but by an arrangement made with the Royal College of Veterinary Surgeons, the Society's examination ceased in 1881. Holders of the Society's Veterinary Certificate are entitled to become Members of the Royal College of Veterinary Surgeons on payment of certain fees, without being required to undergo any further examination. The number of Students who passed for the Society's Certificate is 1183.

The Society votes annually eleven silver medals for Class Competition to each of the two Veterinary Colleges in Scotland, the one in Edinburgh and the other in Glasgow.

FORESTRY DEPARTMENT.

The Society grants FIRST and SECOND-CLASS CERTIFICATES in FORESTRY.

1. An Examination will be held each year about the month of March.
2. The next Examination will be held at 3 George IV. Bridge, Edinburgh, in the month of March 1927, provided a sufficient number of candidates present themselves for examination.
3. *Candidates must possess—1. A thorough acquaintance with the theory and practice of Forestry. 2. A general knowledge of the following branches of study, so far as these apply to Forestry: (*a*) The Elements of Botany and Forest Zoology; (*b*) The Elements of Physics, Chemistry, and Meteorology; (*c*) Forest Engineering, including Land and Timber Measuring and Surveying; Mechanics and Construction, as applied to fencing, draining, bridging, road-making, and saw-mills; and Implements of Forestry; (*d*) Book-keeping and Accounts.
4. The Examinations are open to candidates of any age, may be both written and oral, and will include such practical tests as may from time to time be decided to apply.
5. The maximum number of marks for each subject is 100; Pass marks for First-Class Certificate—Forestry, 75; all other subjects, 60. Pass marks for Second-Class Certificate—Forestry, 60; all other subjects, 50.
6. A candidate who obtains Pass marks in certain subjects, but fails in others, may come up for these other subjects alone, it being understood that without the special permission of the Society no candidate will be eligible to enter for more than two subsequent Examinations.
7. A candidate who has obtained the Second-Class Certificate may enter again for the First-Class Certificate.

The list of students who obtained certificates prior to 1899 appears in the 'Transactions,' Fifth Series, vol. xi. (1899).

The following have since obtained First-Class Certificates:—

ERIC ARTHUR NOBBS, Department of Agriculture, Cape Town,	1899
GEORGE POTTS, Grey College, Bloemfontein, Orange River Colony,	1899
DUNCAN S. RABAGLIATI, 1 St Paul's Road, Bradford,	1901
FRANK SCOTT, Dumfries House Mains, Cumnock,	1903
WILLIAM T. STOCKLEY, Rose Villa, Garswood, near Wigan,	1906
A. FRANK WILSON, C.D.A. (Edin.), Reedieleys, Auchtermuchty,	1907
GEORGE FISHER, Farm Brook, Pilling, Garstang, Lancs.,	1909
JOHN PATTEN, jun., Hulne Park, Alnwick,	1909

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* *Note.*—A new Syllabus has been prepared and will come into effect in 1927. See pages 27-29 hereof.

Alexander Mitchell, Dalmeny Park, Edinburgh, . 1909
John D. Davidson, Brimstage, Birkenhead, . . . 1911
Donald Doull, M.A., A.R.C.Sc., High School, Kelso, . 1911
James W. Mackay, Jervaulx Abbey, Middleham, Yorks., 1915
Harry Watson, Darnaway, Forres, ... 1915
Reginald Watt Hunter, 94 St George's Terrace, Newcastle-on-Tyne, ... 1919
John M'Ewen, Monaughty Forest, by Elgin . . . 1922
Alfred Pope, Swinsty Hall, Fewston, Harrogate . . 1922
William Lyne Watt, Department of Agriculture, P.O. Box 323, Nairobi, Kenya Colony, Africa . . . 1926

The following have since obtained Second-Class Certificates :—

William Bruce, B.Sc., East of Scotland College of Agriculture, Edinburgh, ... 1901
Rajappier Swaminathan, 56 Jesus Lane, Cambridge, . 1901
Thomas Usher, Courthill, Hawick, ... 1901
Allan Carruth, Lawmarnock, Kilbarchan, . . . 1905
Alex. M. Lumsden, Newburn Schoolhouse, Upper Largo, 1905
Robert M. Wilson, Laws Cottage, Duns, . . . 1905
Thomas Campbell, Greystoke, Penrith, ... 1906
Donald Ferguson, Quarry Lane, Lennoxtown, . . 1906
Charles Penrhyn Ackers, Huntly Manor, Gloucester, 1908
Robert Howie, Beechwood, Arbroath, ... 1908
John Trotter, D.Sc., 22 West Savile Terrace, Edinburgh, 1908
James A. S. Watson, Downieken, Dundee, . . . 1908
Norman H. Pearson, 52 Percy Park, Tynemouth, . . 1909
Lionel F. Stobart, Royal Agricultural College, Cirencester, ... 1911
Alexander George Norrie, Cairnhill, by Turriff, . . 1913
William Watt, Darnaway, Forres, ... 1913
William P. Greenfield, 6 Littlefield Lane, Grimsby, . 1915

* SYLLABUS OF EXAMINATION.

I.—SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

I. *Principles of Scientific Forestry.*—1. Effects of heat, light, moisture, and air-currents on forest vegetation. 2. Effects of depth, porosity, moisture, and chemical composition of the soil on forest vegetation. 3. Effects of forest vegetation on the soil and air. 4. Rate and extent of development, longevity, and reproductive power of trees. 5. Pure and mixed woods. 6. Systems of sylviculture.

II. *Forest Organisation.*—7. General ideas regarding a regulated system of forest management. 8. Knowledge of working plans of forests.

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* For new syllabus, to come into effect in 1927, see pages 27-29 hereof.

III. *Practical Management of Woods.*—9. Draining and irrigation. 10. Choice of species for various situations. 11. Seed and sowing, including nurseries. 12. Planting. 13. Natural regeneration by seed, shoots, and suckers. 14. Formation of mixed woods. 15. Tending of young woods. 16. Pruning. 17. Thinning. 18. Sylvicultural characteristics of the principal trees.

IV. *Injuries by Storms and Fires.*—19. Storms. 20. Fires.

V. *Timber.*—21. Its technical properties. 22. Its defects. 23. Recognition of different kinds of timber. 24. Processes for increasing its durability.

VI. *Utilisation of Produce.*—25. Uses of wood and other produce. 26. Felling. 27. Conversion. 28. Seasoning. 29. Transport. 30. Sales. 31. Harvesting of bark.

II.—FOREST BOTANY AND FOREST ZOOLOGY.

(*a*) Forest Botany.

The fundamental facts of morphology, physiology, and classification of plants. The structure and function of the plant-cell and the plant-tissues. Their primary distribution. The secondary changes they exhibit in consequence of perennation.

The structure and function of the root and shoot in flowering-plants. Buds, their forms and uses. The flower. The fruit. The seed.

The structure and function of vegetative and reproductive organs of fungi.

Relationship of plants to air, soil, and water. Effect of light, heat, and mechanical agencies upon plants. Nutrition. The nature and elements of the food of plants. Sources of plant-food. The absorption, elaboration, transference, and storage of food. Respiration and transpiration. Parasites and saprophytes. Symbiosis.

Growth of plants in length and thickness. Correlation of growth, pruning. Germination of seeds. Formation of wood and bark. Healing of wounds.

Diseases of plants due to faulty nutrition and unfavourable circumstances of growth. Diseases due to attacks of fungi.

Natural reproduction and propagation by seeds and by buds. Fertilisation of flowers. Hybridisation. Artificial propagation by budding, grafting, layering, and cutting.

The characters of the large groups and classes of the vegetable kingdom. The characters of the families of plants which include the chief timber trees. The botanical characteristics of the principal British forest-trees (including the structural features of their wood). The weeds of the forest and their significance.

(*b*) Forest Zoology.

The group Insecta: its position in the animal kingdom. Structure, mode of reproduction, and metamorphosis of insects. The outlines of classification of the group. Conditions favourable to the numerical increase of insects. Natural checks to increase (*e.g.*, birds, mammals, parasitic insects). The identification and life-history of the more important insects injurious to forest-trees and fruit-trees. The damage caused by these insect pests and their mode of attack. The damage caused by animals. Preventive and remedial measures.

III.—PHYSICS, CHEMISTRY, AND METEOROLOGY.

Physics.

Mass, weight, specific gravity, solid, liquid, and gaseous states of matter. Capillarity, osmose, vapour tension, suction pump, force pump, syphon, barometer, atmospheric pressure. Boyle's law. Levers and pulleys. Heat, measurement of heat, specific heat; transference of heat by conduction, convection, and radiation. Boiling and freezing. Latent heat. The thermometer. The conservation and transformation of energy. Light—reflection, refraction, polarisation; the spectrum. The rudiments of electricity and magnetism.

Chemistry.

Elements. Oxygen, hydrogen, nitrogen,—their preparation, properties, and chief compounds. Acids, bases, salts. Combustion, oxidation, reduction. Sulphur, carbon, phosphorus; and their compounds, with oxygen and hydrogen. Metals—potassium, sodium, calcium, magnesium, aluminium, iron, copper, lead, mercury, and their chief compounds. Carbohydrates, marsh gas, olefiant gas, alcohol, acetic acid, oxalic acid. Distillation of wood and coal.

Meteorology.

The atmosphere, its composition and physical properties. Measurement of pressure and temperature. The barometer. Rain, hail, snow, fog, cloud, dew, the dew-point, hoar frost. The weathering of rocks and soils. Gases injurious to vegetation.

IV.—FOREST ENGINEERING, INCLUDING LAND AND TIMBER MEASURING AND SURVEYING; MECHANICS AND CONSTRUCTION AS APPLIED TO FENCING, BRIDGING, ROAD-MAKING, AND SAW-MILLS.

1. The use of the level and measuring-chain. Measuring and mapping surface areas. 2. The measurement of solid bodies—as timber, stacked bark, fagots, &c., earthwork. 3. The different modes of fencing and enclosing plantations; their relative advantages, durability, cost of construction, and repairs. 4. The setting out and formation of roads for temporary or permanent use. 5. The construction of bridges over streams and gullies; of gates or other entrances. 6. The construction and working of estate saw-mills.

V.—ARITHMETIC—BOOK-KEEPING.

1. Arithmetic—including Practice, Proportion, and Decimal Fractions. 2. Book-keeping—including the description of books to be kept, the solution of practical questions in Book-keeping and the preparation of Accounts.

SYLLABUS OF EXAMINATION.

(To come into effect in 1927.)

I.—SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

I. *Principles of Scientific Forestry.*—1. The tree: conditions essential for its nutrition and growth. 2. The soil: its physicial structure and properties. 3 The different forms of woodland crops. 4. Pure woods and mixed woods. 5. Even-aged and uneven-aged woods. 6. Sylvicultural characteristics of the principal trees, broad-leaved and coniferous, including recently introduced species of sylvicultural value.

II. *Forest Organisation.*—7. General ideas regarding the necessity for a national forest policy. 8. Conditions necessary for the formulation of a regulated system of forest management. 9. Working plans, their compilation, construction, and use.

III. *Practical Management of Forests.*—10. Assessment of the suitability of areas for afforestation purposes. 11. Preparation of areas for planting. 12. Treatment of heather, bracken, scrub. 13. Draining and enclosing. 14. Choice of species for various situations. 15. Seed—harvesting, extraction, storage. 16. Nurseries, temporary and permanent—choice of site, internal lay-out, management, including lifting, packing, and transport of plants. 17. Planting and sowing in the forest—methods suited to various conditions. 18. Natural regeneration by seed. 19. Regeneration by cuttings, layers, stool shoots. 20. Formation of mixed woods, even-aged, uneven-aged, temporary and permanent, use of nurse trees, kinds of nurse trees suitable under different conditions. 21. Tending of young woods. 22. Pruning. 23. Thinning.

IV. *Forest Protection against*—24. Fires, wind, snow, deer, rabbits, squirrels, birds, insects, and fungi.

V. *Timber.*—25. Its technical properties. 26. Its defects. 27. Recognition of different kinds of timber. 28. Processes for increasing its durability.

VI. *Utilisation of Produce.*—29. Uses of wood and other produce. 30. Felling. 31. Conversion. 32. Seasoning. 33. Transport. 34. Measurement, classification, valuation, and marketing of standing timber.

II.—FOREST BOTANY AND FOREST ZOOLOGY.

(a) Forest Botany.

The fundamental facts of morphology, physiology, and classification of plants. The structure and function of the plant-cell and the plant-tissues. Their primary distribution. The secondary changes they exhibit in consequence of perennation.

The structure and function of the root and shoot in flowering-plants. Buds, their forms and uses. The flower. The fruit. The seed.

The structure and function of vegetative and reproductive organs of fungi.

Relationship of plants to air, soil, and water. Effect of light, heat, and mechanical agencies upon plants. Nutrition. The nature and elements of the food of plants. Sources of plant-food. The absorption, elaboration, transference, and storage of food. Respiration and transpiration. Parasites and saprophytes. Symbiosis.

Growth of plants in length and thickness. Correlation of growth, pruning. Germination of seeds. Formation of wood and bark. Healing of wounds.

Diseases of plants due to faulty nutrition and unfavourable circumstances of growth. Diseases due to attacks of fungi.

Natural reproduction and propagation by seeds and by buds. Fertilisation of flowers. Hybridisation. Artificial propagation by budding, grafting, layering, and cutting.

The characters of the large groups and classes of the vegetable kingdom. The characters of the families of plants which include the chief timber trees. The botanical characteristics of the principal British forest-trees (including the structural features of their wood). The weeds of the forest and their significance.

(b) Forest Zoology.

General classification of animals. The differences between Vertebrates and Invertebrates.

Earthworms and their relation to soil formation; life-history and habits.

Snails and Slugs: General characters and habits.

Insects: Structure and metamorphosis. General classification; the orders of insects important in forestry. Habits and life-histories of important insects in the following groups: leaf-eaters, bark and stem borers, root feeders, sucking insects, predaceous and parasitic insects.

Insect Control: Natural control; preventive and remedial measures.

Spiders and Mites: General characters and habits.

Birds: Recognition and relation to forestry of crows, jay, woodpecker, hawks, owls and tits, also game birds.

Mammals: General characters of the main groups represented by the deer, rabbit, hedgehog, and weasel; the relation of these to forestry.

III.—METEOROLOGY AND GEOLOGY.

Meteorology.

The atmosphere, its composition and physical properties. Measurement of pressure and temperature. The barometer. Rain, hail, snow, fog, cloud, dew, the dew-point, hoar frost. Gases injurious to vegetation.

Geology.

The crust of the earth, its structure and denudation. Recognition of igneous, sedimentary, and metamorphic rocks. Weathering of rocks and soils; formation of alluvium, gravels, and glacial deposits. The composition, mode of weathering, and distribution of the various geological formations in the British Isles. The relationship of strata to the configuration of a country and to the overlying soils, rainfall, and drainage.

IV.—FOREST ENGINEERING, INCLUDING LAND AND TIMBER MEASURING AND SURVEYING; MECHANICS AND CONSTRUCTION AS APPLIED TO FENCING, BRIDGING, ROAD-MAKING, AND SAW-MILLS.

The use of the level and measuring chain. Chain surveying. Plotting. Levelling and contouring. Measuring and mapping surface areas. Knowledge of the 25″ and 6″ Ordnance Survey maps and their markings. Use of the planimeter. Plane table surveying. The measurement of solid bodies—as timber, stacked bark, fagots, &c., earthwork.

Use and characteristics of materials—as bricks, stone, lime, mortar, cement, concrete, reinforced concrete, iron, steel.

Simple building construction. Roofs of various types. The construction of simple bridges over streams and gullies. Culverts, &c.

The setting out and formation of roads for temporary and permanent use.

Drainage. Gauging of streams. Water-power. Construction of dams, weirs, water channels, &c. The general arrangement and working of estate saw-mills. Timber slides. Forest tramways. Working and management of steam engines and boilers, oil and petrol engines.

The different modes of fencing and enclosing plantations; their relative advantages, durability, cost of construction, and repairs.

Detailed drawings from figured sketches.

V.—ARITHMETIC—BOOK-KEEPING.

1. Arithmetic—including Practice, Proportion, and Decimal Fractions.
2. Book-keeping—including the description of books to be kept, the solution of practical questions in Book-keeping and the preparation of Accounts.

EXAMINATION PAPERS, 1922.

PRACTICAL FORESTRY.

1. In a practically treeless hilly area, the planting of which you are entrusted with, explain the principles which would guide you in arriving at the limit of altitude for profitable tree-growth, considering generally the effect of latitude, aspect, wind, and soil (plantable soil being classed good, fair, and poor). State briefly the advantages of such a classification of soils.

2. Explain the method you would adopt in laying down the boundary line of an extensive plantation, assuming that the area to be planted is of a hilly and exposed nature.

State the type of fence you would recommend for the foregoing area for preventing sheep and ground-game from entering the plantation; and give a specification and an approximate cost per yard of its erection.

3. Compare the respective advantages and disadvantages of Spring and Autumn planting, and indicate under what conditions either season may be preferred.

What are, in your opinion, the most favourable spacing distances at which to plant trees? Choose any four species, and state the planting distances you would select for each, and state your reasons for the spacings you indicate.

4. Describe the kinds of soil and climatic conditions most favourable for the successful cultivation of the following: Oak, Ash, Larch, Douglas Fir, and Norway Spruce.

5. An estate with 2000 acres of timber is to be sold, and you are invited by the vendor to make a valuation of the timber. The timber is composed of 500 acres of mature wood of Oak, Ash, and Larch, 100 years of age; 500 acres of pure Scots Pine, 80 years of age; and 500 acres of pure Scots Pine from 30 to 40 years of age. There are also 500 acres of young plantations under 20 years of age. State how you would proceed to ascertain volume and value of the first three classes, and on what principle you would value the younger plantations. Give prices per cubic foot for the older timber.

6. At what stage in the life of a coniferous plantation should thinning operations be begun? and state the objects and benefits of thinning.

(*Three hours allowed.*)

FOREST BOTANY AND FOREST ZOOLOGY.

(*A*) FOREST BOTANY.

(Four *questions only to be attempted.*)

1. Describe the buds, flowers, and fruit of Elm, Alder, and Lime.

2. What is the general microscopic structure of the foliage leaf of such a tree as the Beech or Oak? In what essential ways does the structure differ from that in the leaf of a Pine? Suggest reasons for the differences.

3. Write a life-history of the Fungus which causes "Dry-Rot." Suggest preventive measures.

4. Write a life-history of Taxus baccata.

5. Name and give characters for recognition of any three forest weeds known to you. State the harm each does.

(*B*) FOREST ZOOLOGY.

(Two *questions only to be attempted.*)

1. Describe by means of diagrams the nature of the brood-galleries of the Pine Beetle (Myelophilus piniperda), the Large Ash-Bark Beetle (Hylesinus crenatus), the Two-Toothed Pine Beetle (Pityogenes or Tomicus bidentatus).

2. Describe a Lepidopterous insect harmful to Larch or Pine under the headings:—

(*a*) how recognised as adult,
(*b*) how recognised as larva,
(*c*) the nature of the damage,
(*d*) treatment.

3. Name and distinguish four kinds of gall due to insects, and write an account of one of them, from origin to ripe condition.

(*Two hours and a half allowed.*)

PHYSICS, CHEMISTRY, AND METEOROLOGY.

1. State what is meant by the terms combustion, oxidation, and reduction, distinguishing between the last two. Under which of these heads would you classify the following chemical changes: phosphorus, copper, mercuric oxide, magnesium, heated in air?

2. What type of compound is produced when an element combines with oxygen? Into what groups may the elements be divided according to the properties of these compounds? State the general properties, distinguishing the elements of these groups.

3. Name the chief sources of *any three* of the following metals, and describe the extraction of the metal in *any one* case: sodium, calcium, iron, aluminium, lead, mercury.

4. Define the boiling-point of a liquid. If the boiling-point of a liquid is observed simultaneously at the foot and on the top of a mountain, state and explain any difference which would be noted.

5. Explain the formation of cloud and rain. What is understood by the "dew-point," and what is the purpose of determining it?

(An hour and a half allowed.)

FOREST ENGINEERING.

1. From the following level-book notes, with a datum line 25 feet below the ground-level at distance O:

(*a*) Calculate and check the reduced levels.

(*b*) Plot the section to a horizontal scale of 100 feet to an inch, and a vertical scale of 10 feet to an inch.

(*c*) Indicate the direction of bottom line of drainage pipes, and find the slope of this line.

Rise.	B. S.	I. S.	F. S.	Fall.	Reduced level.	Distance in feet.	Remarks.
	14·54				25·00	—	B. M.
		12·63				0	⊙ A, bottom of drain-pipe is to be 2·05 feet below surface at ⊙ A.
		8·51				90	
		10·24				160	
	7·65		14·28			240	
		4·10				350	
		2·89				430	
		8·51				540	
		11·94				620	
			15·19			700	⊙ B, level of water of pond. Bottom of drain-pipe to be 1 foot above water-level.

2. Draw a rough sketch of a field from the following notes, and find its area in acres, &c.

	Links.	
	⊙ B	
	854	
210	721	
0	600	
	415	182
124	280	
	134	110
	⊙ A	

3. Describe, with the aid of a diagram, how you would proceed to carry out the survey of a thick wood, where all the work must be done from the outside, and only a chain and poles are available.

4. A circular plantation is to be formed containing four acres. How many yards of fencing would be required to enclose it?

5. A ditch is to be 3 feet deep, 4½ feet wide at the top, and 1½ feet wide at the bottom; it is 120 rods in length, and the cost of excavating the soil is estimated at 6d. per cubic yard. What will be the total cost of the work?

6. How would you obtain the width of a river which is too broad for direct measurement? No instrument, other than a chain, is to be used.

(*Two hours allowed.*)

ARITHMETIC AND BOOK-KEEPING.

I. Arithmetic.

1. Find the simple interest on £7665 for 35 days at 5 per cent.
2. What is the value of a piece of timber 5 feet 3 inches long, 2 feet 4 inches wide, and 1 foot 2 inches thick @ 10s. 6d. per cubic foot?
3. Find by practice the value of 3 cwt., 3 quarters, and 14 lbs. @ 8s. 4d. per ton.
4. A small wood, square in shape, has an area of 5625 square yards. It is to be fenced, and the fence is to be erected at a distance of 2 yards from the wood. How many yards of fencing are required?

II. Book-keeping.

Woodlands Estate has been recently purchased. A separate set of books is to be kept for each branch of the estate management by its supervisor, in which the details of all the transactions affecting the branch are to be recorded. At the end of the period these will be incorporated in the estate office books. You are in charge of one of the branches of the estate work.

1. State briefly—
    (1) What books you consider necessary properly to record your transactions.
    (2) What classes of accounts you expect it will be necessary to open in the ledger.
    (3) How at any given date you would satisfy yourself of the accuracy of your book-keeping.
    (4) How you would close your books at the end of the year.

Note.—The transactions you have to record will be confined to purchases and sales, cash receipts and payments, including all expenses incidental to your department, and you will control a bank account.

2. Make the entries for the following transaction in the cash-book and the ledger.

1922.

Jan.	1.	Received from estate office	£150	0	0
"	2.	Paid into bank	120	0	0
"	2.	Ordered on credit from G. Toole, implements valued at	100	0	0
"	2.	Paid for books and stationery in cash	2	0	0
"	3.	Sold to S. Birch on credit 500 Scots pine @ 15s. each			
"	3.	Sold to D. Dick, and received payment, deadwood valued at	10	0	0
"	3.	Bought from F. Timber, young trees on credit	200	0	0
"	4.	Paid hire of horses used in haulage	5	0	0
"	6.	Received from S. Birch to account, and paid into bank	250	0	0
"	6.	Paid G. Toole in full by cheque, less 5 per cent discount	95	0	0
"	7.	Paid wages for week	8	0	0

3. How would you propose to keep trace of all implements purchased or acquired?

(*One hour and a half allowed.*)

DAIRY DEPARTMENT

EXAMINATION IN THE SCIENCE AND PRACTICE OF DAIRYING

This Examination, instituted in 1897, is conducted by the National Agricultural Examination Board, appointed jointly by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland.

REGULATIONS.

1. The Societies may hold annually in England and in Scotland, under the management of the National Agricultural Examination Board appointed by them, one or more Examinations for the National Diploma in the Science and Practice of Dairying; the Diploma to be distinguished shortly by the letters "N.D.D."

2. The Examinations will be held on dates and at places from time to time appointed and duly announced.

3. A non-returnable fee of *Three Guineas* will be required from each candidate.

4. Forms of Entry for the Examination in England may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C. 1," and must be returned to him duly filled up, with the entry fee of £3, 3s., on or before Saturday, August 7, 1926.

5. Forms of Entry for the Examination in Scotland may be obtained from "The Secretary, Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh," and must be returned to him duly filled up, with the entry fee of £3, 3s., on or before Saturday, August 7, 1926.

6. A candidate may enter for Examination either in England or Scotland, but not in both, and a candidate who has once taken part in an Examination in England cannot enter for an Examination in Scotland, or *vice versa.*

7. As a preliminary to the acceptance of an application for permission to enter for the Examination, a candidate must produce:—

(1) A certificate testifying that he or she has received at least SIX session months' instruction (not necessarily continuous) in practical dairy work at an approved Dairy training institution.

(2) Evidence that he or she has spent at least SIX months on an approved Dairy farm (which period must not run concurrently with that referred to in sub-section 1), and that he or she has taken part in the work.

(3) Certificates in a prescribed form, from a recognised institution (or recognised institutions) showing that he or she has attended approved courses in Chemistry, Bacteriology, and Botany, and has satisfied the authorities of the institution of his (or her) fitness for admission to the Examination.

8. In the Examination a candidate will be required to satisfy the Examiners, by means of written papers, practical work, and *viva voce*, that he or she has—

(1) A general knowledge of the management of a Dairy Farm, including

the rearing and feeding of Dairy Stock, the candidate being required to satisfy the Examiners that he or she has had a thorough training and practical experience in all the details of Dairy work as pursued on a farm.

(2) A thorough acquaintance, both practical and scientific, with everything connected with the management of a Dairy, and the manufacture of Butter and Cheese.

(3) Practical skill in Dairying, to be tested by the making of Butter and Cheese.

Note.—A candidate must be prepared to make any one of the following varieties of Hard Pressed Cheese, the Examiner in Cheesemaking having the option of saying during the Examination what variety a candidate shall make:—

At the English Centre—Cheddar, Cheshire, or Derby.
At the Scottish Centre—Cheddar, Dunlop, or Cheshire.

(4) Capacity for imparting instruction to others.

9. The maximum marks obtainable and the marks required for a pass in each subject are as follows:—

	Max.	Pass.
General Dairying Paper	200	120
Cheese-making Paper	200	120
Chemistry and Bacteriology Paper . .	200	120
Hard Pressed Cheese-making . . .	200	150
Blue Veined Cheese-making . .	100	75
Soft Cheese-making	100	75
Butter-making	200	150
Capacity for imparting instruction to others	100	50
	1300	860

Honours will be awarded to candidates obtaining an aggregate of 80 per cent (1040) of the maximum marks (1300) in the examination, provided that they also obtain at least 80 per cent (320) of the maximum marks (400) in the General Dairying and Cheese-making Papers.

10. The Board reserve the right to postpone, to abandon, or in any way, or at any time, to modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

DATES OF EXAMINATIONS IN 1926.

ENGLAND — Friday, September 3, and following days, at the University College and British Dairy Institute, Reading; last date for receiving applications, Saturday, August 7.

SCOTLAND — Friday, September 17, and following days, at the Dairy School for Scotland, Kilmarnock; last date for receiving applications, Saturday, August 7.

SYLLABUS OF SUBJECTS OF EXAMINATION

I.—GENERAL MANAGEMENT OF A DAIRY FARM.

1. *General Management of Pastures and Crops on a Dairy Farm.*
2. *Buildings.*—Situation, Surroundings, Construction, Ventilation, and

Drainage of Farm Buildings. Suitability of building materials. Water supply. Construction and arrangement of Dairies: (*a*) for General Purposes; (*b*) for Special Purposes.

3. *Foods and Feeding.*—Summer and Winter Feeding of Dairy Cattle. Root crops. Green fodder. Ensilage. Different kinds of food and their composition. Their effect upon Milk, Butter, and Cheese. Special Foods used in Dairy Feeding. Preparation of food for Dairy Stock. Rearing and feeding of young Stock. Feeding and management of Pigs and Poultry.

4. *Dairy Cattle in Health and Disease.*—Characteristics of different Breeds and choice of Dairy Cattle. General functions of the organs of the animal body. Breeding. Parturition. Organs which secrete milk. Process of milk secretion. Changes which food undergoes during digestion. Diseases of Dairy Cattle and their remedies.

II.—MANAGEMENT OF DAIRY.

1. *Milk and Cream.*—Process of Milking. Dairy Utensils and Appliances, hand and power. Cooling of Milk. Separation and ripening of Cream. Different systems of Cream-raising. Utilisation of Skim-milk. Keeping of Milk. Importance of Cleanliness. Diseases spread by Milk. Conveyance and sale of Milk. Milk records. Keeping of Dairy and Farm Accounts. Creameries. Butter and Cheese Factories. Different systems of Dairying and their comparative returns.

2. *Butter.*—Churns and other Butter-making appliances, hand and power. Souring of Cream. Churning. Washing and working of Butter. Butter-milk. Packing and transmission of Butter. Salting and keeping of Butter. Colouring. Characteristics of good Butter.

3. *Cheese.*—Principles of its manufacture. Making of different kinds of Cheese (from cream, whole-milk, and skim-milk). Acidity of Milk. Use of Rennet and its substitutes. Whey. Appliances for Cheese-making. Ripening and storage of Cheese. Packing and sale of Cheese. Making of Cream and other soft Cheeses.

III.—CHEMISTRY AND BACTERIOLOGY.

[*N.B.*—In this Section there will be expected of the candidate a sound understanding of the scientific principles underlying the practice of Dairying, a knowledge of the composition, nature, properties, and changes undergone by the different substances met with in Dairying, and a general acquaintance with the principles of laboratory methods so far as Dairying is concerned, including the use of the microscope in identifying organisms.]

1. *General Principles of Chemistry.*—The nature of elements and compound bodies. The different forms of matter—solid, liquid, gaseous. Specific gravity, and instruments for determining it. Temperature, and methods of measuring it. Thermometric scales. The influence of temperature in Dairy operations. Physical and chemical changes involved in the following: solution, precipitation, filtration, distillation, oxidation, and reduction. Acids, Bases, Salts—their distinctive properties. Acidity and Alkalinity—their influence and quantitative estimation. Examination and identification of specimens and apparatus.

The Atmosphere—its constituents and impurities; its influence on Dairy operations. Atmospheric pressure.

Water—constituents of pure and natural waters. The impurities of water, and whence derived. The importance of a pure water supply in Dairying.

General knowledge of the elementary chemistry of the following substances and their compounds so far as met with in Dairying: Potash, Soda, Ammonia, Lime, Phosphoric Acid, Alcohol, Acetic Acid, Carbonic Acid, Butyric Acid, Lactic Acid, Albumen, Casein, Fats, Milk-sugar, Glycerine, Pepsin.

Saponification of Fats.

2. *Milk and its Products.*—The nature, composition, properties, and chemical constituents of milk. Microscopical appearances presented by milk. The circumstances that affect the quality and quantity of milk produced by the cow. The influence of feeding. The changes which occur in the keeping of milk, and how produced. The natural and artificial souring of milk. Rennet, its nature and use. Physical and chemical changes involved in the making and keeping of Butter, and in the manufacture and ripening of Cheese. Separated Milk, Condensed Milk, Fermented Milk. The use of Preservatives. Methods of Milk-testing—Mechanical methods, their theory and practice. A general knowledge of the methods employed in the chemical analysis of Milk and Butter. Adulteration of Milk, Cream, Butter, and Cheese—the ways in which adulteration is practised, the changes in composition thereby produced, and a general knowledge of the methods employed in detecting the same.

3. *The Chemistry of Feeding.*—The principal constituents of Food materials, and the functions they severally fulfil. The influence of Food constituents on milk production. Assimilation and Digestion. Animal Heat and Respiration. Milk as a Food. The relation of Food to Manure.

4. *Bacteriology.*—Moulds. Yeasts. Bacteria. The principal kinds of Bacteria met with in Dairying—their forms, methods of reproduction, and conditions of life. The influence of physical agencies upon Bacterial life. Air and Water as carriers of Bacteria. The changes produced by Bacteria in milk and its products. Useful forms and their functions. Harmful forms and their effects—Coagulation, Discoloration, Taints, &c. Pathogenic organisms. The classification of organisms—organised ferments and enzymes. The isolation of Bacteria. Methods of preparation of pure cultures and their practical use. Nutritive media. Soil Bacteriology—Assimilation of Nitrogen by Plants—Nitrification—Denitrification. Pasteurisation and Sterilisation—the practical application of these to Dairy matters. Fermentation and Putrefaction. Disinfectants and Preservatives.

N.B.—*Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.*

IV.—PRACTICAL SKILL IN DAIRY WORK.

Candidates must be prepared—(1) to produce at or before the Examination a satisfactory certificate of proficiency in the Milking of Cows, signed by a practical Dairy Farmer, and to satisfy the Examiners by a practical test, if so required; (2) to churn and make into Butter a measured quantity of Cream; and (3) to make one Cheese of each of the following varieties: (i) Hard-pressed, of not less than 30 lb. [*see Note to Regulation* 8 (3)]; (ii) Veined or blue-moulded, of not less than 10 lb.; and (iii) also to make one or other of the following Soft Cheeses: Cambridge, Camembert, Coulommier, or Pont l'Evêque.

V.—CAPACITY FOR IMPARTING INSTRUCTION TO OTHERS.

Candidates must also show practically that they are familiar with the management of a Dairy, and are capable of imparting instruction to others.

The following obtained the Diploma in Scotland in 1925 :—

Diploma, with Honours.

ARCHIBALD M'VICAR, Achanelid, Glendaruel, Argyll.

Diploma.

ISABELLA ALEXANDER, Grudges, Tannach, Wick.
SARAH C. ANDERSON, Schoolhouse, Logie Coldstone, Dinnet, Aberdeen.
A. HUBERT ANGER, 6 Blythswood Square, Glasgow.
EVELYN S. BAKEWELL, 20 Belmont Road, Aberdeen.
MARGARET BROWN, 45 South Hamilton Street, Kilmarnock.
MARGARET CRAIG, Hollas, Grange, Keswick.
JOHN R. CURRIE, Drumadoon, Blackwaterfoot, Isle of Arran.
HELEN M. M. DALE, Bracklynn, Uplawmoor, Renfrewshire.
HARRIET G. DAWSON, Hilton of Fern, Brechin, Forfar.
MARY HELEN DEANS, South Fornet, Dunecht, Aberdeenshire.
MAY DICKIE, Ingram Place, Kilmarnock.
WINIFRED M. DRUMMOND, Ingersoll, Kilmarnock.
ELIZABETH FERGUS, Surrigarth, Skelwick, Westray, Orkney.
JAMES T. GEMMELL, Lochaber, Barnfield, Urmston, Manchester.
BERNARD J. HAIMES, Seale Hayne Agricultural College, Newton Abbot.
PHŒBE HALKETT, 19 India Street, Edinburgh.
HUGH M'CRAE, 22 St Leonards Road, Ayr.
ALEXANDER M'GIBBON, Woodside Farm, Cambusbarron, by Stirling.
ANDREW M'KENZIE, 26 Balhaven Terrace, Wishaw.
MARGARET M. MACKENZIE, Westfield, Thurso.
MARGARET W. MACLEOD, 65 Caledonia Road, Saltcoats.
AGNES ADAM MEIKLE, 96 Albert Drive, Pollokshields.
AGNES R. C. MITCHELL, 12 Wellington Square, Ayr.
MICHAEL V. NENADOVITCH, Ramatcha, Kragujevatz, Serbia.
GERRIT D. LE ROUX, Vink River, Robertson, South Africa.
ROBERT R. SINTON, Kirkby Thore, Penrith.
JAMES S. SMITH, 20 Kemp Street, Hamilton.
MARGARET STRANG, Grasmere, 3 Hamilton Drive, Cambuslang.
STANLEY B. SUMMERS, Colinton, Prestwick.
WALTER WEIR, Burnfoot Cottage, Falkirk.
MARY I. S. WHITELAW, Queen Street, Castle Douglas.
THOMAS W. WILLIAMSON, Dickinson Place, Allonby, Maryport.
AGNES S. P. WHYTE, Newhouse Farm, Hallside.
WILLIAM C. WYLLIE, Whitehill Farm, Sanquhar.

The following gained the Diploma in England in 1925:—

Diploma, with Honours.

STANTON GIBSON, B.Sc., British Dairy Institute, Reading.

Diploma.

LAURA A. ADLINGTON, Midland Agricultural and Dairy College, Kingston, Derby.
CHARLES D. BERRY, British Dairy Institute.
VIOLET BLOW, British Dairy Institute.
CHARLOTTE M. H. BUSH, Lancs. C.C. Dairy School, Hutton, Preston.
SARAH CAMPBELL, Lancs. C.C. Dairy School.
MARIAN A. CAUTLEY, British Dairy Institute.
ALFRED J. G. CLAY, British Dairy Institute.
ISABEL JOAN DAY, Lancs. C.C. Dairy School.
MOLLIE DAVIES-COOKE, Studley College, Studley, Warwickshire.
EVA FAITH DENNY, British Dairy Institute.
JOHN DYSON, East Anglian Institute of Agriculture, Chelmsford.
ROSALIND ELLERSHAW, British Dairy Institute.
MARY E. FAIRFAX-CHOLMELEY, British Dairy Institute.
WINIFRED K. FULLER, Lancs. C.C. Dairy School.
PAUL W. B. GATES, British Dairy Institute.
ALAN V. GIBBERD, British Dairy Institute.
HARRY OATES HIRST, Midland Agricultural and Dairy College.
STANLEY HITCHON, Midland Agricultural and Dairy College.
HELEN HOGGET, Lancs. C.C. Dairy School.
ISABEL MARY HUDSON, British Dairy Institute.
BEATRICE MARY ILES, British Dairy Institute.
ROSAMOND JACKSON, Midland Agricultural and Dairy College.
REGINALD ALFRED JEFFREY, Midland Agricultural and Dairy College.
MARY KEEDWELL, Lancs. C.C. Dairy School.
SYBIL KENDRICK-LLOYD, British Dairy Institute.
DOROTHY KENYON, University College of Wales, Aberystwyth.
JESSIE CROSTHWAITE LAIDLAW, British Dairy Institute.
DOROTHY A. C. LONG, British Dairy Institute.
JOHN MILNE, British Dairy Institute.
BLODWEN K. OWEN, British Dairy Institute.
STELLA MARGARET PETERS, Studley College, Warwickshire.
ETHEL E. PRICE, British Dairy Institute.
OLIVE JANET ROBISON, East Anglian Institute of Agriculture.
ROLAND S. SULLIVAN, British Dairy Institute.
MARY E. TODD, British Dairy Institute.
ARTHUR WELLS, British Dairy Institute.
EDWARD B. WEST, British Dairy Institute.
ALLEN HEYWOOD WILSON, Midland Agricultural and Dairy College.
E. MONICA L. WOOD, British Dairy Institute.

EXAMINATION PAPERS OF PAST YEARS.

Copies of papers set at past Examinations in Agriculture and in Dairying so far as available may be had on application. Price 6d. per set.

[N.D.A. Papers available are those for the years 1921, 1922, 1923, 1924, 1925.]

REVISED REGULATIONS AND SYLLABUS

FOR EXAMINATION IN

THE SCIENCE AND PRACTICE OF DAIRYING

To come into force in 1927.

REGULATIONS.

1. The Societies may hold annually in England and in Scotland, under the management of the National Agricultural Examination Board appointed by them, one or more examinations for the National Diploma in the Science and Practice of Dairying; the Diploma to be distinguished shortly by the letters "N.D.D."

2. The Examinations will be held on dates and at places from time to time appointed and duly announced.

3. A non-returnable fee of *Three Guineas* will be required from each candidate.

4. Forms of Entry for the Examination in England may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C. 1," and must be returned to him duly filled up, with the entry fee of £3, 3s., on or before , August , 1927.

5. Forms of Entry for the Examination in Scotland may be obtained from "The Secretary, Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh," and must be returned to him duly filled up, with the entry fee of £3, 3s., on or before , August , 1927.

6. Any candidate may enter for the Examination either in England or Scotland, but not in both, and a candidate who has once taken part in an Examination in England cannot enter for an Examination in Scotland, or *vice versa.*

7. As a preliminary to the acceptance of an application for permission to enter for the Examination, a candidate must produce:—

(1) A certificate testifying that he or she has attended a Diploma Course in the subjects of the Examination covering *two academic years* at an approved Dairy Training Institution and has satisfied the authorities of the Institution of his or her fitness for admission to the Examination. This period shall include six session months' instruction (consisting of not more than two periods) in practical dairy work.

(2) Evidence that he or she has spent at least six months on an approved Dairy farm and taken part in the work. This period must not run concurrently with the six months' practical training referred to in subsection 1.

8. A candidate who has already taken a Degree in Agriculture of a British University or a Diploma in Agriculture recognised by the

National Agricultural Examination Board, will be allowed to enter for the National Diploma in Dairying Examination after one year's training at a recognised institution, providing that such course includes at least six months' training in practical dairy work, and that he or she has worked for at least six months on an approved Dairy Farm.

9. In the Examination a candidate will be required to satisfy the Examiners by means of written papers, practical work, and *viva voce*, that he or she has—

(1) A general knowledge of the Management of a Dairy Farm, including the rearing and feeding of Dairy Stock, the candidate being required to satisfy the Examiners that he or she has had a thorough training and practical experience in all the details of Dairy Work as pursued on a farm.

(2) A thorough acquaintance, both practical and scientific, with everything connected with the management of a Dairy, and the manufacture of Butter and Cheese.

(3) A general knowledge of Dairy Factory Management, Dairy Hygiene, Dairy Engineering, and Dairy Book-keeping.

(4) Practical skill in Dairying, to be tested by the making of Butter and Cheese.

NOTE.—A candidate must be prepared to make any one of the following varieties of Hard Pressed Cheese, the Examiner in Cheesemaking having the option of saying during the Examination what variety a candidate shall make :—

AT THE ENGLISH CENTRE : Cheddar, Cheshire, or Derby.

AT THE SCOTTISH CENTRE : Cheddar, Dunlop, or Cheshire.

10. The maximum marks obtainable and the marks required for a pass in each subject are as follows :—

	Maximum Marks	Pass Marks
WRITTEN EXAMINATION—		
Dairy Farming and Dairy Hygiene (in two sections)	200	120
(*a*) Dairy Farming (125 marks).		
(*b*) Dairy Hygiene (75 marks).		
Dairying (in two sections)	200	120
(*a*) Principles of Dairying (125 marks).		
(*b*) Dairy Factory Management and Dairy Engineering (75 marks).		
Chemistry	100	60
(*a*) General Chemistry and Physics.		
(*b*) Dairy Chemistry.		
Dairy Bacteriology	100	60
Dairy Book-keeping	100	50
PRACTICAL EXAMINATION—		
Hard-pressed Cheese-making	200	150
Blue-veined Cheese-making	100	75
Soft Cheese-making	100	75
Butter-making	200	150
	1300	860

Honours will be awarded to candidates obtaining an aggregate of 80 per cent (1040) of the maximum marks (1300) in the Examination, provided that they also obtain at least 80 per cent (320) of the maximum marks (400) in the Dairy Farming, Hygiene, and Dairying papers.

11. The Board reserve the right to postpone, to abandon, or in any way or at any time to modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

SYLLABUS OF SUBJECTS OF EXAMINATION

1.—DAIRY FARMING AND GENERAL HYGIENE.

(a) DAIRY FARMING.

SOILS AND CROPS.—Types of Soils suitable for dairying. Rotations and systems of cropping. Cultivation, manuring, and management of grain, root, and forage crops used in dairying. Silage. Temporary and permanent pastures, haymaking.

PLANT PHYSIOLOGY.—Roots, shoots, flowers, fruit, and seeds of agricultural plants.

DAIRY CATTLE.—Characteristics of different breeds. Relation of conformation and appearance to Milk Yield. Choice of dairy cattle in relation to climate and soil. The milk yields of the more important breeds, and suitability for the milk trade, cream, butter, and cheese production.

The management of a Dairy Herd. Cattle breeding and grading up of dairy stock. Calf rearing and management of young stock.

Milk Recording. Systems, and utilisation of results. Details of official schemes.

FOODS AND FEEDING.—Summer and winter feeding of dairy cattle and young stock. Fodder crops and green forage. Roots. Ensilage. Concentrated foods, meals, cakes. Preparation of food. The effect of food on milk and its products.

PIG KEEPING.—Characteristics of the more important breeds. The breeding, rearing, and fattening of pigs. Production of pork and bacon.

FARM MANAGEMENT.—Systems of dairy farming. The selection, stocking, and equipment of typical farms. Organisation of the farm and disposal of produce.

DAIRY ECONOMICS.—The Dairy Industry of Great Britain and its relationship to Agriculture. The relative importance of the various products. The retail milk trade. Markets, Dairy organisation, and co-operation. Modern developments in the Dairy industry. Sources of imported Dairy Produce.

(b) DAIRY HYGIENE.

ANIMAL PHYSIOLOGY.—General functions of the organs of the animal body. Breeding. Parturition. The structure of the udder and the process of milk secretion. Changes which food undergoes during digestion.

VETERINARY.—The more important diseases of dairy cattle and their treatment. The transmission and eradication of disease.

MILK HYGIENE.—Sanitary conditions. Suitability of water supply. Methods of milking and handling of milk. Regulations affecting milk production. Milk in relation to Public Health.

FARM BUILDINGS.—Situation, chief dimensions, and construction of cow houses and dairy buildings. Housing for young stock and pigs. Air space and ventilation, drainage, and water supply.

II.—DAIRYING.

(a) PRINCIPLES OF DAIRYING.

MILK.—Milking by hand and machinery. Importance of cleanliness. Cooling of milk. Prevention of contamination. Pasteurisation. Sterilisation. Keeping of milk. Milk testing and sampling. Use of Gerber and Babcock Testers. Interpretation of results. Legal standards. Legislation affecting milk production.

CREAM.—Separators and their management. Different systems of cream raising and ripening of cream. Changes during ripening. Natural and artificial ripening, and preparation and uses of starters. Preparation of cream for sale. Uses of preservatives. Clotted cream.

BUTTER.—Churns and butter-making appliances. Preparation of cream for churning. Washing and working butter. Butter milk. Packing and transmission of butter. Selection and keeping of butter. Salting. Use of preservatives. Characteristics of good butter and method of judging. Circumstances affecting the flavour, texture, colour, and keeping qualities of butter. Potting butter for keeping. Causes of inferior butter.

CHEESE.—Principles of manufacture. Appliances for cheese-making. The making of the principal varieties of British, Colonial, and Continental cheese from cream, whole milk, and skim milk. Acidity of milk. Common tests for acidity. Uses of rennet and its substitutes. Whey. Ripening and storage of cheese. Packing and sale of cheese. Making of cream and other soft cheese. Defects in cheese and their causes. Judging cheese.

(b) DAIRY FACTORY MANAGEMENT AND DAIRY ENGINEERING.

FACTORY PRACTICE.—Milk depots and handling of factory milk. Systems of cooling and refrigeration. Pasteurisation. Factory butter and cheese-making. Milk powders. Condensed milk. Frozen milk. Ice cream. Dried casein. Fermented milk. Lactose and whey-butter. Margarine manufacture. Equipment of milk depots, butter, cheese, and dairy factories.

FACTORY MANAGEMENT.—Factory routine. Organisation of labour. Handling of milk on arrival at the factory. Methods of dealing with the milk. Milk contracts. Dairy factory legislation.

DAIRY APPLIANCES AND MACHINERY.—Appliances used in the production and handling of milk, butter, and cheese-making. Care and management of engines and boilers, dairy factory machinery, refrigerating machinery.

BUILDINGS.—Situation, construction and drainage of creameries, milk depots, and dairy factories.

III.—DAIRY CHEMISTRY.

(*a*) GENERAL CHEMISTRY AND PHYSICS.

GENERAL PRINCIPLES OF CHEMISTRY.—The nature of elements and compound bodies. The different forms of matter, solid, liquid, gaseous. Specific gravity and instruments for determining it. Specific heat. Temperature and methods of measuring it. Thermometric scales. The influence of temperature in dairy operations. Physical and chemical changes involved in the following: Solution, precipitation, filtration, distillation, oxidation, and reduction. Acids: Bases. Salts: their distinctive properties. Acidity and Alkalinity: their influence and quantitative estimation. Examination and identification of specimens and apparatus.

THE ATMOSPHERE.—Its constituents and impurities; its influence on dairy operations. Atmospheric pressure.

WATER.—Constituents of pure and natural waters. The impurities of water and whence derived. The importance of a pure water supply in dairying.

INORGANIC AND ORGANIC CHEMISTRY.—General knowledge of the elementary chemistry of the following substances and their compounds so far as met with in dairying: Potash, soda, ammonia, lime, phosphoric acid, alcohol, acetic acid, carbonic acid, butyric acid, lactic acid, albumen, casein, fats, milk-sugar, glycerine, pepsin, saponification of fats.

(*b*) DAIRY CHEMISTRY.

CHEMISTRY OF MILK.—The nature, composition, properties, and chemical constituents of milk. Microscopical appearances presented by milk. The influence of feeding. The changes which occur in the keeping of milk, and how produced. The natural and artificial souring of milk. Rennet, its nature and use.

MILK PRODUCTS.—Physical and chemical changes involved in the making and keeping of butter and in the manufacture and ripening of cheese. Separated milk. Condensed milk. Fermented milk. Synthetic milk. The use of preservatives.

DAIRY ANALYSIS.—Analytical methods, their theory and practice. A general knowledge of the methods employed in the chemical analysis of milk, butter, and cheese. Adulteration of milk, cream, butter, and cheese, the ways in which adulteration is practised, the changes in composition thereby produced, and a general knowledge of the methods employed in detecting the same.

CHEMISTRY OF FEEDING.—The principal constituents of food materials and the functions they severally fulfil. The influence of food constituents on milk production. Assimilation and digestion. The manurial value of foods. Milk and milk products as foods.

IV.—DAIRY BACTERIOLOGY.

GENERAL BACTERIOLOGY.—Bacteria: their form, classification, growth, and reproduction. The microscope and its use. Staining and microscopic examination of bacteria. Methods of isolation and cultivation. Preparation of culture media. Fermentations and chemical changes produced by bacteria. Enzymes and their action. Effects of heat, cold, sterilisation, pasteurisation, disinfectants, and preservatives on bacteria and enzymes. Bacteriological examination of water supplies.

BACTERIOLOGY OF MILK.—The changes produced by bacteria in milk. Useful forms and their functions. Harmful forms and their effects. Coagulation, discolouration, taints, &c. Bacteriological and other standards in relation to the cleanliness of milk.

MILK PRODUCTS.—The bacteria concerned in the ripening of cream and butter-making. "Starters," their preparation and management. The ripening of hard, soft, and blue-veined cheese. Bacteria injurious to milk products, including condensed and dried milk.

DAIRY MYCOLOGY.—Moulds and yeasts in dairy practice. Their form, classification, growth, and relation to dairy products.

V.—DAIRY BOOK-KEEPING.

GENERAL PRINCIPLES.—Principles of double-entry book-keeping. Use of diary, journal, cash-book, and ledger. Posting to ledger. Preparation of profit and loss account and balance-sheet. Systems of valuation.

FARM BOOK-KEEPING.—Application of the principles of book-keeping to dairy farming and to the sale of milk in bulk or by retail.

FACTORY ACCOUNTS.—Methods of book-keeping as applied to milk depots and dairy factories.

BUSINESS MANAGEMENT.—General office work. Banking and use of cheques.

VI.—PRACTICAL SKILL IN DAIRY WORK.

Candidates must be prepared—(1) To produce at or before the Examination a satisfactory certificate of proficiency in the milking of cows, signed by a practical Dairy Farmer, and to satisfy the Examiners by a practical test, if so required; (2) to churn and make into Butter a measured quantity of Cream; and (3) to make one Cheese of each of the following varieties: (1) Hard-pressed, of not less than 30 lb. (see Note to Reg. 9 (4).) (2) Veined or blue-moulded, of not less than 10 lb., and (3) also to make one or other or the following Soft Cheeses: Cambridge, Camembert, Coulommier, or Pont l'Evêque.

CHEMICAL DEPARTMENT

Chemist to the Society—J. F. TOCHER, D.Sc., F.I.C., Crown Mansions, 41½ Union Street, Aberdeen.

The object of the Chemical Department is to promote the diffusion of a knowledge of Chemistry as applied to agriculture among the members of the Society, to carry out experiments for that purpose, to assist members who are engaged in making local experiments requiring the direction or services of a chemist, to direct members in regard to the use of manures and feeding-stuffs, to assist them to put the purchase of these substances under proper control, and in general to consider all matters coming under the Society's notice in connection with the Chemistry of Agriculture.

MEMBERS' PRIVILEGES IN RESPECT TO ANALYSES.

MANURES, FEEDING-STUFFS, SOILS, AND AGRICULTURAL PRODUCTS.

This scale of fees applies only to members whose subscriptions are not in arrears.

The fees for analyses made for members of the Society shall, until further notice, be as follows:—

The determination of one ingredient in a single sample of a *manure* or of a *feeding-stuff*, ...	5s.
The determination of two or more ingredients in a single sample of a *manure* or of a *feeding-stuff*, ...	10s.

For example—

Linseed and other cakes, for oil or for albuminoids, .	5s.
Feeding-meals, ground cereals, for oil or for albuminoids, .	
Bone-meals, for nitrogen or for phosphate, . .	
Compound manures, for nitrogen or for soluble phosphates, or for insoluble phosphates or for potash, . .	
Superphosphate, for soluble phosphate or for insoluble phosphate, ...	
Thomas-phosphate powder, for citric soluble phosphate or for total phosphate, ...	
Linseed and other cakes, for oil and albuminoids, &c., .	10s.
Feeding-meals, ground cereals, for oil, albuminoids, &c., .	
Bone-meals, for nitrogen, phosphate, &c., . . .	
Compound manures, for nitrogen, soluble phosphates, insoluble phosphates, and potash, . . .	
Superphosphate, for soluble phosphate and insoluble phosphate, ...	
Thomas-phosphate powder, for citric soluble phosphate and total phosphate, ...	

Limestone, giving the percentage of lime,	£0	5	0
Limestone, complete analysis,	1	0	0
Lime, including ground lime, percentage of alkaline lime,	0	5	0
" " " complete analysis,	1	0	0
Analysis of soil, to determine fertility and recommendation of manurial treatment,	1	10	0
Complete analysis of soil,	2	10	0
Analysis of agricultural products—hay, grain, ensilage, roots, &c.,	1	0	0

Not more than four samples per annum will be analysed under the Society's scheme for any one member.

Note to Members sending Samples for Analysis.

The Directors are anxious to take any steps in their power to expose the vendors of inferior fertilisers and feeding-stuffs, and the members can give them assistance in this by supplying to the chemist, when sending samples for analyses, information as to the guarantee, if any, on which the goods were sold, and also as to the price charged.

These charges apply only to analyses made for agricultural purposes, and for the sole and private use of members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

Valuations of manures, according to the Society's scale of units, will be supplied if requested.

DAIRY PRODUCE.

Milk, full analysis,	£0	10	0
" solids and fat,	0	5	0
" fat only,	0	2	6

(*Not more than six samples of milk per annum will be analysed under the Society's scheme for any one member.*)

Butter, full analysis,	0	10	0
" partial analysis (water and fat),	0	5	0
Cheese,	0	10	0

WATER.

Analysis of water[1] to determine purity and fitness for domestic use (the Committee reserve power to refuse from one member more than two samples annually under the Society's scheme).....at the reduced fee of,	1	0	0

MISCELLANEOUS.

Search for poisons in food or viscera,	2	0	0

(*Veterinary surgeons are not entitled to have searches made for poisons in food or viscera under the Society's scheme for clients who are not members of the Society.*)

Sulphate of copper, percentage of copper and purity,	0	5	0
" " complete analysis,	0	10	0
Arsenic, carbolic acid and tar acids, and other poisons used in making sheep dips, insecticides, &c.,	5s. to £1		

Samples should be sent (carriage paid) to Dr J. F. Tocher, Crown Mansions, 41½ Union Street, Aberdeen.

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[1] Cases containing bottles for water samples and instructions for sampling are sent from the laboratory on application.

INSTRUCTIONS FOR SELECTING SAMPLES FOR ANALYSIS.

MANURES.

Any method of sampling mutually agreed upon between buyer and seller may be adopted, but the following method is recommended as a very complete and satisfactory one: Four or more bags should be selected for sampling. Each bag is to be emptied out separately on a clean floor, worked through with the spade, and one spadeful taken out and set aside. The four or more spadefuls thus set aside are to be mixed together until a uniform mixture is obtained. Of this mixture one spadeful is to be taken, spread on paper, and still more thoroughly mixed, any lumps which it may contain being broken down with the hand. Of this mixture two samples of about half a pound each should be taken by the purchaser or his agent, in the presence of the seller or his agent or two witnesses (due notice having been given to the seller of the time and place of sampling), and these samples should be taken as quickly as possible, and put into bottles or tin cases to prevent loss of moisture, and having been labelled, should be sealed by the samplers—one or more samples to be retained by the purchaser, and one to be sent to the chemist for analysis.

FEEDING-STUFFS.

Samples of feeding-stuffs which are in the form of meal may be taken in a similar manner.

Samples of cake should be taken by selecting four or more cakes from the bulk. These should be nutted to a size not larger than walnuts. The nutted cake should then be thoroughly mixed and samples of not less than one pound each taken from it. The samples should be put into bottles or tins, sealed up, and labelled. One sample should be sent to the analyst, and one or more duplicates retained by the purchaser.

SOILS.

Dig a little trench about two feet deep, exposing the soil and subsoil. Cut from the side of this trench vertical scrapings of the soil down to the top of the subsoil. Catch these on a clean board, and collect in this manner two pounds of soil taken from the whole surface of the section. Similar scrapings of subsoil immediately below should be taken and preserved separately. Five or six similarly drawn samples at least should be taken from different parts of the field, and kept separate while being sent to the chemist, that he may examine them individually before mixing in the laboratory.

VEGETABLE PRODUCTS.

Turnips, &c., at least 50 bulbs carefully selected as of fair average growth.

Hay, straw, ensilage, &c., should be sampled from a thin section cut across the whole stack or silo, and carefully mixed; above 2 lb. weight is required for analysis.

Grain should be sampled like manures.

DAIRY PRODUCE.

Milk.—Samples of milk from individual cows should be taken direct from the milk-pail after complete milking. Average samples from a number of cows should be taken immediately after milking. Specify whether the sample is morning or evening milk, or a mixture of these. Samples to be tested for adulteration should not be drawn from the bottom or taken from the top of standing milk, but they should be ladled from the vessel after the milk has been thoroughly mixed. Samples of milk should be sent immediately to the analyst.

For most purposes a half-pint bottle of milk is a large enough sample.

Butter and Cheese.—About quarter-pound samples are required.

WATERS.

When the water is from a well, it should be pumped for some minutes before taking the sample.

If the well has been standing unused for a long time, it should be pumped for some hours, so that the water may be renewed as far as possible.

If the well has been newly dug or cleaned out, it should be pumped as dry as possible, daily, for a week before taking the sample.

Water from cisterns, tanks, ponds, &c., should be sampled by immersing the bottle entirely under the water, and holding it, neck upwards, some inches below the surface. *Water from the surface should not be allowed to enter the bottle.*

Spring or stream water should not be sampled in very wet weather, but when the water is in ordinary condition. Such waters should be sampled by immersing the bottle, if possible; but if not deep enough for that purpose, a perfectly clean cup should be used for transferring the water to the bottle.

When the bottle has been filled the stopper should be rinsed in the water before replacing it.

Interference with or disturbance of wells or springs, or the ground in their immediate vicinity, must be carefully avoided during sampling, and for at least twenty-four hours before it.

After a sample has been taken, it should be sent to the laboratory as speedily as possible.

A description of the source and circumstances of the water should accompany the sample, as the interpretation of the analytical results depends to some extent on a knowledge of such particulars.

N.B.—Stone jars and old wine bottles are unsuitable for conveying samples. Winchester quarts chemically cleaned should be obtained from the laboratory, Crown Mansions, 41½ Union Street, Aberdeen.

LOCAL ANALYTICAL ASSOCIATIONS

With the view of encouraging, as well as regulating the conduct of, Local Analytical Associations, the Society, from 1881 to 1893, contributed from its funds towards their expenses a sum not exceeding £250 annually. In view of the passing of the Fertilisers and Feeding Stuffs Act, 1893, it was decided, at a meeting of the Directors on the 6th of December 1893, to discontinue that grant after the 1st of March 1894.

COMPOSITION AND CHARACTERISTICS OF MANURES AND FEEDING-STUFFS.

(*See 'Transactions,' Fifth Series, vol. xi.*, 1899.)

FORMS OF GUARANTEE

GUARANTEE OF MANURE.

I guarantee that the manure called......................and sold by me to ....contains—

Soluble phosphoric acid =Phosphate of lime dissolved............per cent.
Insoluble phosphoric acid=Phosphate of lime undissolved.........per cent.
Potash salts . . =Potash (K_2O) . . . .per cent.
Total nitrogen . . . .per cent.

Signature of seller........................

Date.................19...

GUARANTEE OF FEEDING-STUFF.

I guarantee that the feeding-stuff called...............and sold by me to . ...contains—

.... per cent albuminoids.
.... per cent oil.

Signature of seller........................

Date.................19

[PRICES OF FERTILISERS, &C.

PRICES OF FERTILISERS AND FEEDING STUFFS FOR SEASON 1926.

(Cash Prices as fixed on 3rd February. These prices are subject to variation from month to month or oftener).

SUPERPHOSPHATES.

Item to be Valued.	Prices per Unit for the undernoted Percentages.		
Phosphates Dissolved . .	30 per cent.	35 per cent.	38 per cent.
February Price .	£3 2 6	£3 7 6	£3 12 6
Price per Unit	2/1	1/11	1/11

N.B.—These units are based on the RETAIL CASH PRICES OF MANURES in bags at Leith and Glasgow. When these units are multiplied by the percentages in the analysis of a Manure, they will produce a value representing very nearly the **cash price** *per ton at which TWO TONS may be bought in fine sowable condition at Leith or Glasgow. Larger purchases may be made on more favourable terms.*

FERTILISERS.

(Other than Superphosphates.)

Name of Fertiliser.	Guarantee.	Price per Ton.			Price per Unit.		
		£	s.	d.	£	s.	d.
Sulphate of Ammonia neutral * . .	21·1 % Nitrogen	12	18	0	0	12	2¾
Basic Slag	24 % Total Phosphate	2	4	6	0	1	10¼
,, ...	30 % ,, ,,	3	0	0	0	2	0
,, ...	40 % ,, ,,	3	10	0	0	1	9
Bone Meal, Home	4 Nit. 45 % ,,	8	10	0	N 0	18	7¾
					P 0	2	1½
,, Indian	45 % ,,	8	15	0	N 0	19	2½
					P 0	2	2¼
Steamed Bone Flour . . .	1 ,, 65 % ,,	6	5	0	N 0	14	11
					P 0	1	8½
,, ,, . . .	¾ ,, 60 % ,,	6	0	0	N 0	15	10¼
					P 0	1	9½
Ground Mineral Phosphate † . . .	56 % ,,	2	5	0	0	0	9¾
,, ,, † . . .	75 % ,,	3	15	0	0	1	0
Nitrate of Soda . . .	15·5 % Nitrogen	13	10	0	0	17	5
,, Lime‡	13·0 % ,,	11	15	0	0	18	1
Potash Salt	30·0 % Potash	4	8	0	0	2	11¼
,, ...	20·0 % ,,	3	1	0	0	3	0½
Kainit	14·0 % ,,	2	14	0	0	3	10¼
Muriate of Potash	50·0 % ,,	8	5	0	0	3	3½
Sulphate of Potash	50·0 % ,,	10	2	6	0	4	0½

The prices for all fertilisers are cash prices for two-ton lots in bags at Leith or Glasgow, unless otherwise stated.

*** Carriage paid to any railway station in four-ton lots. The price for March, April, and May is 3/- per ton more than February price.**

† 30 per cent through 100 meshes to the linear inch; 5/- extra for 80 per cent through 120 meshes.

‡ Free on rail *ex* ship.

***Note on Slags.*—Ground Basic Slag will be delivered (in 1¼ cwt. bags), carriage paid, in four-ton lots and upwards to any station in the following counties:—Slag containing 24 per cent Tricalcium Phosphate—Ayrshire and Renfrewshire, 45/6; Dumbarton, 46/6; Lanark, Edinburgh, Stirling, Linlithgow, Haddington, Perth, 47/6; Fife and Kinross, 49/-; Peebles and Dumfries, 49/6; Wigtown, 50/-; Kirkcudbright, 50/6; Forfar, 52/6. The prices for Slag containing 30 per cent Tricalcium Phosphate vary from 58/- in Ayrshire and Renfrewshire, to 65/- in Forfarshire. The terms are net cash one month.**

FEEDING STUFFS.

Name of Feeding Stuff.	Price per Ton.			Name of Feeding Stuff.	Price per Ton.		
	£	s.	d.		£	s.	d.
Linseed Cake (Home)	12	5	0	Dried Brewers' Grains	8	10	0
Cotton Seed Cake (Bombay)	6	7	6	Dried Distillery Grains	9	15	0
Cotton Seed Cake (Egyptian)	7	0	0	Peas Mutter	10	0	0
Decorticated Ground Nut Cake	11	10	0	Feeding Treacle	7	10	0
Undecorticated Ground Nut Cake	8	5	0	Locust Beans (Kibbled)*	8	5	0
Palm Kernel Cake	9	5	0	Maize (Flat)*	8	5	0
Decorticated Cotton Seed Meal	10	15	0	Maize (Round Plate)	9	0	0
Rice Bran Meal	7	0	0	Beans (Imported China)	10	17	6
Broad Bran	8	15	0	Home Oats	9	10	0
Bran (Medium Offals)	7	15	0	White Fish Meal	19	0	0
Parings (Fine Offals)	8	0	0	Sugar Beet Refuse †	8	0	0

In Railway Sacks. † *Ex* quay.

CLASSIFICATION OF MANURES.

BONE MEALS	Genuine Bone Meal contains at least 45 per cent Tricalcium Phosphate, and from 2·75 per cent to 4 per cent Nitrogen. If phosphates are low nitrogen will be high, and conversely. If Bone Meal is so finely ground that 90 per cent or over passes a sieve of $\frac{1}{16}$-inch mesh, an addition of 2/6 per ton should be made to the Valuation.
STEAMED BONE FLOUR	Ground to flour, and containing about 60 to 65 per cent Phosphates and about 1 to $1\frac{1}{4}$ per cent Nitrogen.
MIXTURES AND COMPOUND MANURES	To be valued according to the following units: Nitrogen, 15/-; Soluble Phosphate, 2/1; Insoluble Phosphate, 1/3; and Potash, 3/9. The value given is exclusive of mixing, bags, and bagging, and is the value at Leith or Glasgow.
DISSOLVED BONES	Must be pure—*i.e.*, containing nothing but natural bones and sulphuric acid.

INSTRUCTIONS FOR VALUING MANURES.

The unit used for the valuation of manures is the hundredth part of a ton, and as the results of analyses of manures are expressed in parts per hundred, the percentage of any ingredient of a manure when multiplied by the price of the unit of that ingredient represents the value of the quantity of it contained in a ton.

As an example take muriate of potash; a good sample (see p. 52) will be guaranteed to contain 50 per cent of oxide of potash. All potash manures are valued according to the amount of potash (oxide of potash) they yield, and muriate of potash yields 50 per cent potash (K_2O)—*i.e.*, 50 units per ton; and as a ton of muriate of potash costs £8, 5s., the price of the unit is the fiftieth part of that—viz., 3/3½. If on analysis a sample of muriate of potash guaranteed to contain 50 per cent of potash is found to contain only 48 per cent, the price per ton will be 6/7 (twice 3/3½) less—viz., £7, 18s. 5d.

Similarly with all other manures, the price per unit is derived from the price per ton of a sample of good material up to its guarantee, and

therefore the proper price per ton of a manure is found by multiplying the price of the unit of the valuable ingredient by the percentage as found by analysis. If a manure contains more than one valuable ingredient, the unit value of each ingredient is multiplied by its percentage, and the values so found when added together give approximately the price per ton of the manure.

Nitrate of soda contains no ammonia, but it contains nitrogen, and 14 units of nitrogen are equivalent to 17 units of ammonia.

The commercial values of manures are determined by means of the UNITS in the following manner:—

Take the results of analysis of the manure, and look for the following substances:—

Phosphates dissolved (or soluble phosphate)
Phosphates undissolved (or insoluble phosphate)
Total phosphates
Nitrogen
Potash

No other items but these are to be valued.

Should the results of analysis or the guarantee not be expressed in that way, the chemist or the seller should be asked to state the quantities in these terms.

Suppose the manure is ground mineral phosphate—

The proportion of phosphate present may be 75 per cent. The price per unit of phosphate in ground mineral phosphate is 1/-. The value of ground mineral phosphate containing 75 per cent phosphate is therefore 75 times 1/-, equal to £3, 15s. per ton.

Suppose the manure is a superphosphate—say an ordinary superphosphate with 34 per cent soluble phosphate,—the price per unit of phosphate in superphosphate is 1/11. It is valued thus—

Soluble phosphate. 34 times 1/11, equal to, say, £3, 5s. 2d.

Insoluble phosphate is not valued in a superphosphate.

Suppose the manure is a compound fertiliser containing 3 per cent nitrogen; 12 per cent soluble phosphate; 6 per cent insoluble phosphate; and 4 per cent potash.

The value of the nitrogen	will be 3 times	15/- =	£2	5	0	per ton.
„ „ soluble phosphate	„ 12 „	2/1 =	1	5	0	„
„ „ insoluble „	„ 6 „	1/3 =	0	7	6	„
„ „ potash	„ 4 „	3/9 =	0	15	0	„
			£4	12	6	

The value of this manure will thus be £4, 12s. 6d. per ton, exclusive of the cost of mixing, bags, and bagging.

Note.—The units have reference solely to the MARKET PRICES of Manures, and not to their AGRICULTURAL VALUES.

TABLE OF COMPENSATION VALUES FOR 1926.

TABLE SHOWING THE VALUE OF FEEDING-STUFFS AS MANURE PER TON, AND THE COMPENSATION VALUE PER TON OF FOOD CONSUMED, BASED ON THE AVERAGE UNIT PRICES OF FERTILISERS FOR 1926.

The following is a Table showing (under Section A) the average proportions of digested nitrogen, undigested nitrogen, phosphoric acid, and potash present in the feeding-stuffs named. The Table also shows the value per unit of nitrogen (digested and undigested), phosphoric acid, and potash, the prices per unit being the average value per unit prevailing for 1926. Under Section B of the Table is shown the compensation value per ton of food consumed for each of the feeding-stuffs named, based on the unit prices for 1926. Column (1) of Section B of the Table shows the value per ton recovered in dung; Col. (2) of the same section shows the value of the lasting part of dung per ton; while the remaining three columns show the residual values per ton after one crop, two crops, and three crops have been removed.

In accordance with the decision arrived at by the Committee appointed by a representative meeting of Scottish agriculturists, who reported in September 1917 on the "Compensation for Manurial Improvements and Cumulative Fertility," under the Agricultural Holdings (Scotland) Act, 1908, the value of undigested nitrogen per ton as manure is calculated as being 70 per cent of the value of digested nitrogen. The residual value, after one crop has been removed, is taken as one-half of the original residual value. Residual values, after one crop has been removed, are reduced by one-half after each crop.

Foods.	Value per									
	Digested Nitrogen.					Undigested Nitrogen.				
	Per cent in food. (1)	Value at 15s. 9d. per unit. (2)		Two-fifths value to manure. (3)		Per cent in food. (4)	* Value at 11s. per unit. (5)		Three-fourths value to manure. (6)	
		s.	d.	s.	d.		s.	d.	s.	d.
Cotton-cake, decorticated	5·92	93	3	37	4	0·98	10	9	8	1
Cotton-cake, undecorticated	2·73	43	0	17	2	0·81	8	11	6	8
Linseed-cake	4·08	64	3	25	8	0·67	7	4	5	6
Linseed	3·28	51	8	20	8	0·32	3	6	2	8
Soya-bean cake	6·10	96	1	38	5	0·75	8	3	6	2
Palm-nut cake	1·88	29	7	11	10	0·62	6	10	5	2
Cocoa-nut cake	2·65	41	9	16	8	0·75	8	3	6	2
Earth-nut cake	6·86	108	1	43	3	0·76	8	4	6	3
Rape cake	3·97	62	6	25	0	0·93	10	3	7	8
Beans	3·48	54	10	21	11	0·52	5	9	4	4
Peas	3·10	48	10	19	6	0·50	5	6	4	2
Wheat	1·49	23	6	9	5	0·31	3	5	2	7
Barley	1·16	18	3	7	4	0·49	5	5	4	1
Oats	1·52	23	11	9	7	0·48	5	3	3	11
Maize	1·22	19	3	7	8	0·48	5	3	3	11
Rice-meal	1·08	17	0	6	10	0·82	9	0	6	9
Locust beans	0·82	12	11	5	2	0·38	4	2	3	2
Malt	1·34	21	1	8	5	0·36	4	0	3	0
Malt culms	3·12	49	2	19	8	0·78	8	7	6	5
Bran	1·98	31	2	12	6	0·52	5	9	4	4
Brewers' and distillers' grains (dried)	2·34	36	10	14	9	0·96	10	7	7	11
Brewers' and distillers' grains (wet)	0·59	9	4	3	9	0·22	2	5	1	10
Dried distillery dreg	3·45	54	4	21	9	1·86	20	6	15	5
Clover hay	1·21	19	1	7	8	1·03	11	4	8	6
Meadow hay	0·88	13	10	5	6	0·62	6	10	5	2
Wheat straw	0·02	0	4	0	2	0·43	4	9	3	7
Barley straw	0·10	1	7	0	8	0·30	3	4	2	6
Oat straw	0·17	2	8	1	1	0·33	3	8	2	9
Mangolds	0·15	2	4	0	11	0·07	0	9	0	7
Swedes	0·16	2	6	1	0	0·09	1	0	0	9
Turnips	0·13	2	1	0	10	0·05	0	7	0	5
Fish-meal	8·08	127	3	50	11	0·90	9	11	7	5

See last paragraph of explanatory note to the Table.

A. TON AS MANURE.						B. COMPENSATION VALUE PER TON OF FOOD CONSUMED.				
Phosphoric Acid.			Potash.			† (1) Value recovered in dung.	‡ (2) Value of lasting part of dung	Residual Value after.		
Per cent in food (7)	Value at 4s. 6d. per unit. (8)	Three-fourths value to manure. (9)	Per cent in food. (10)	Value at 3s. 9d. per unit. (11)	Three-fourths value to manure. (12)	(13)	(14)	* (3) One crop. (15)	* (4) Two crops. (16)	* (5) Three crops. (17)
	s. d.	s. d.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
3·10	13 11	10 5	2·00	7 6	5 8	61 6	24 2	12 1	6 1	3 0
2·00	9 0	6 9	2·00	7 6	5 8	36 3	19 1	9 7	4 9	2 5
2·00	9 0	6 9	1·40	5 3	3 11	41 10	16 2	8 1	4 1	2 0
1·54	6 11	5 2	1·37	5 2	3 11	32 5	11 9	5 11	2 11	1 6
1·30	5 10	4 5	2·20	8 3	6 2	55 2	16 9	8 5	4 2	2 1
1·20	5 3	3 11	0·50	1 11	1 5	22 4	10 6	5 3	2 8	1 4
1·40	6 4	4 9	2·00	7 6	5 8	33 3	16 7	8 4	4 2	2 1
2·00	9 0	6 9	1·50	5 8	4 3	60 6	17 3	8 8	4 4	2 2
2·50	11 3	8 5	1·50	5 8	4 3	45 4	20 4	10 2	5 1	2 6
1·10	4 11	3 8	1·30	4 11	3 8	33 7	11 8	5 10	2 11	1 6
0·85	3 10	2 11	0·96	3 7	2 8	29 3	9 9	4 11	2 5	1 3
0·85	3 10	2 11	0·53	2 0	1 6	16 5	7 0	3 6	1 9	0 11
0·75	3 4	2 6	0·55	2 1	1 6	15 5	8 1	4 1	2 0	1 0
0·60	2 8	2 0	0·50	1 11	1 5	16 11	7 4	3 8	1 10	0 11
0·60	2 8	2 0	0·37	1 5	1 1	14 8	7 0	3 6	1 9	0 11
0·60	2 8	2 0	0·37	1 5	1 1	16 8	9 10	4 11	2 5	1 3
0·80	3 7	2 8	0·80	3 0	2 3	13 3	8 1	4 1	2 0	1 0
0·80	3 7	2 8	0·60	2 3	1 8	15 9	7 4	3 8	1 10	0 11
2·00	9 0	6 9	2·00	7 6	5 8	38 6	18 10	9 5	4 9	2 4
2·70	12 2	9 2	1·45	5 5	4 1	30 1	17 7	8 10	4 5	2 2
1·61	7 3	5 5	0·20	0 9	0 7	28 8	13 11	7 0	3 6	1 9
0·42	1 11	1 5	0·05	0 2	0 2	7 2	3 5	1 9	0 10	0 5
0·44	2 0	1 6	0·22	0 10	0 8	39 4	17 7	8 10	4 5	2 2
0·57	2 7	1 11	1·50	5 8	4 3	22 4	14 8	7 4	3 8	1 10
0·40	1 10	1 5	1·60	6 0	4 6	16 7	11 1	5 7	2 9	1 5
0·24	1 1	0 10	0·80	3 0	2 3	6 10	6 8	3 4	1 8	0 10
0·18	0 10	0 8	1·00	3 9	2 10	6 8	6 0	3 0	1 6	0 9
0·24	1 1	0 10	1·00	3 9	2 10	7 6	6 5	3 3	1 7	0 10
0·07	0 4	0 3	0·40	1 6	1 2	2 11	2 0	1 0	0 6	0 3
0·06	0 3	0 2	0·22	0 10	0 8	2 7	1 7	0 10	0 5	0 2
0·05	0 3	0 2	0·30	1 2	0 11	2 4	1 6	0 9	0 5	0 2
7·24	32 7	24 5	0·50	1 11	1 5	84 2	33 3	16 8	8 4	4 2

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† The figures in column (13) are the sum of columns (3), (6), (9), and (12).

‡ The figures in column (14) are the figures in column (13) from which the corresponding figures in column (3) have been subtracted

BOTANICAL DEPARTMENT

Consulting Botanist to the Society—(vacant).

The Society have fixed the following rates of charge for the examination of plants and seeds for the *bona fide* and individual use and information of members of the Society (not being seedsmen), who are particularly requested, when applying to the Consulting Botanist, to mention the kind of examination they require, and to quote its number in the subjoined schedule. The charge for examination must be paid at the time of application, and the carriage of all parcels must be prepaid.

Scale of Charges.

1. A report on the purity, amount, and nature of foreign materials, and the germinating power of a sample of seed, 1s.
2. Determination of the species of any weed or other plant, or of any vegetable parasite, with a report on its habits and the means for its extermination or prevention, 1s.
3. Report on any disease affecting farm crops, 1s.
4. Determination of the species of any natural grass or fodder plant, with a report on its habits and pasture or feeding value, 1s.

The Consulting Botanist's Reports are furnished to enable members—purchasers of seeds and corn for agricultural or horticultural purposes—to test the value of what they buy, and are not to be used or made available for advertising or trade purposes by seedsmen or otherwise.

Purchase of Seeds.

The purchaser should obtain from the vendor, by invoice or other writing, the proper designation of the seed he buys, with a guarantee of the percentage of purity and germination, and of its freedom from ergot, and in the case of clover, from the seeds of dodder or broom-rape.

It is strongly recommended that the purchase of *prepared mixtures* of seeds should be avoided. The different seeds should be purchased separately and mixed by the farmer: mixtures cannot be tested for germination.

The Sampling of Seeds.

The utmost care should be taken to secure a fair and honest sample. This should be drawn from the bulk delivered to the purchaser, and not from the sample sent by the vendor.

When legal evidence is required, the sample should be taken from the bulk, and placed in a sealed bag in the presence of a witness. Care

should be taken that the sample and bulk be not tampered with after delivery, or mixed or brought in contact with any other sample or bulk.

At least one ounce of grass and other small seeds should be sent, and two ounces of cereals and the larger seeds. When the bulk is obviously impure the sample should be at least double the amount specified. Grass seeds should be sent at least four weeks, and seeds of clover and cereals two weeks, before they are to be used.

The exact name under which the sample has been sold and purchased should accompany it.

Reporting the Results.

The Report will be made on a schedule in which the nature and amount of impurities will be stated, and the number of days each sample has been under test, with the percentage of the seeds which have germinated.

"Hard" clover seeds, though not germinating within the time stated, will be considered good seeds, and their percentage separately stated.

The impurities in the sample, including the chaff of the species tested, will be specified in the schedule, and only the percentage of the pure seed of that species will be reported upon; but the REAL VALUE of the sample will be stated. The Real Value is the combined percentages of purity and germination, and is obtained by multiplying these percentages and dividing by 100: thus in a sample of Meadow Fescue having 88 per cent purity and 95 per cent germination, 88 multiplied by 95 gives 8360, and this divided by 100 gives 83·6, the Real Value.

Selecting Specimens of Plants.

The whole plant should be taken up and the earth shaken from the roots. If possible the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

Parcels or letters containing seeds or plants for examination (carriage or postage paid) must be addressed to ....

NOTE.—*Members are reminded that seeds may now be tested at the Board of Agriculture for Scotland Seed-testing Station. Samples should be addressed to Mr Anderson,* SEED-TESTING STATION, *East Craigs, Corstorphine, Midlothian.*

ENTOMOLOGICAL DEPARTMENT

Consulting Entomologist to the Society—Dr R. STEWART MACDOUGALL,
9 Dryden Place, Edinburgh.

Arrangements have been made with Mr R. Stewart MacDougall, M.A., D.Sc., Edinburgh, to advise members of the Society regarding insects or allied animals which, in any stage of their development, infest—

(*a*) Farm crops.
(*b*) Stored grain.
(*c*) Garden and greenhouse plants.
(*d*) Fruit and fruit trees.
(*e*) Forest trees and stored timber.
(*f*) Live stock (including poultry).

Members consulting Dr MacDougall will please forward with their queries examples of the injured plants, or the injured parts of plants, &c., as well as specimens of the insects or other animals believed to be the cause of the injury.

Specimens should be sent in tin or wooden boxes, or in quills, to prevent injury in transmission.

Address letters and parcels (carriage or postage paid) to Dr R. Stewart MacDougall, 9 Dryden Place, Edinburgh.

The Directors have fixed the fee payable by members to Dr MacDougall at 1s. for each case upon which he is consulted : this fee must be sent to him along with the application for information.

PREMIUMS

GENERAL REGULATIONS FOR COMPETITORS.

1. It is to be distinctly understood that the Society is not responsible for the views, statements, or opinions of any of the writers whose papers are published in the 'Transactions.'

2. All reports must be legibly written, and on one side of the paper only; they must specify the number and subject of the Premium for which they are in competition; they must bear a distinguishing motto, and be accompanied by a sealed letter, similarly marked, containing the name and address of the reporter—initials must not be used.

3. No sealed letter, unless belonging to a report found entitled to the Premium offered, or a portion of it, will be opened without the author's consent.

4. Reports for which a Premium, or a portion of a Premium, has been awarded, become the property of the Society, and cannot be published in whole or in part, nor circulated in any manner, without the consent of the Directors. All other papers will be returned to the authors if applied for within twelve months.

5. The Society is not bound to award the whole or any part of a Premium.

6. All reports must be of a practical character, containing the results of the writer's own observation or experiment, and the special conditions attached to each Premium must be strictly fulfilled. General essays, and papers compiled from books, will not be rewarded or accepted. Weights and measurements must be indicated by the imperial standards.

7. The Directors, before or after awarding a Premium, shall have power to require the writer of any report to verify the statements made in it.

8. The decisions of the Board of Directors are final and conclusive as to all matters relating to Premiums, whether for Reports or at General or District Shows; and it shall not be competent to raise any question or appeal touching such decisions before any other tribunal.

9. The Directors will welcome papers from any Contributor on any suitable subject, whether included in the Premium List or not; and if the topic and the treatment of it are both approved, the writer may be remunerated and his paper published.

CLASS I.

REPORTS.

SECTION 1.—THE SCIENCE AND PRACTICE OF AGRICULTURE.

FOR APPROVED REPORTS.

1. On any useful practice in Rural Economy adopted in other countries, and susceptible of being introduced with advantage into Scotland—The Gold Medal. To be lodged by 1st November in any year.

The purpose chiefly contemplated by the offer of this premium is to induce travellers to notice and record such particular practices as may seem calculated to benefit Scotland. The Report to be founded on personal observation.

2. Approved Reports on other suitable subjects. To be lodged by 1st November in any year.

SECTION 2.—ESTATE IMPROVEMENTS.

FOR APPROVED REPORTS.

1. By the Proprietor in Scotland who shall have executed the most judicious, successful, and extensive Improvement—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

Should the successful Report be written for the Proprietor by his resident factor or farm manager, a Minor Gold Medal will be awarded to the writer in addition to the Gold Medal to the Proprietor.

The merits of the Report will not be determined so much by the mere extent of the improvements, as by their character and relation to the size of the property. The improvements may comprise reclaiming, draining, enclosing, planting, road-making, building, and all other operations proper to landed estates. The period within which the operations may have been conducted is not limited, except that it must not exceed the term of the Reporter's proprietorship.

2. By the Proprietor or Tenant in Scotland who shall have reclaimed within the ten preceding years not less than forty acres of Waste Land—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

3. By the Tenant in Scotland who shall have reclaimed within the ten preceding years not less than twenty acres of Waste Land—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

4. By the Tenant in Scotland who shall have reclaimed not less than ten acres within a similar period—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November in any year.

The Reports in competition for Nos. 2, 3, and 4 may comprehend such general observations on the improvement of waste lands as the writer's experience may lead him to make, but must refer especially to the lands reclaimed—to the nature of the soil—the previous state and probable value of the subject—the obstacles opposed to its improvement—the details of the various operations—the mode of cultivation adopted—and the produce and value of the crops produced. As the required extent cannot be made up of different patches of land, the improvement must have relation to one subject; it must be of profitable character, and a rotation of crops must have been concluded before the date of the Report. *A detailed statement of the expenditure and return* and a certified measurement of the ground are requisite.

5. By the Proprietor or Tenant in Scotland who shall have improved within the ten preceding years the Pasturage of not less than thirty acres, by means of top-dressing, draining, or otherwise, without tillage, in situations where tillage may be inexpedient—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

6. By the Tenant in Scotland who shall have improved not less than ten acres within a similar period—The Minor Gold Medal. To be lodged by 1st November in any year.

Reports in competition for Nos. 5 and 6 must state the particular mode of management adopted, the substances applied, the elevation and nature of the soil, its previous natural products, and the changes produced.

SECTION 3.—HIGHLAND INDUSTRIES AND FISHERIES.

FOR APPROVED REPORTS.

1. The best mode of treating native Wool; cleaning, carding, dyeing, spinning, knitting, and weaving by hand in the Highlands and Islands of Scotland—Five Sovereigns. To be lodged by 1st November in any year.

SECTION 4.—MACHINERY.

FOR APPROVED REPORTS.

To be lodged by 1st November in any year

SECTION 5.—FORESTRY DEPARTMENT.

FOR APPROVED REPORTS.

1. On Plantations of not less than eight years' standing formed on deep peat-bog—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November in any year.

The premium is strictly applicable to deep peat or flow moss; the condition of the moss previous to planting, as well as at the date of the Report, should, if possible, be stated.

The Report must describe the mode and extent of the drainage; and the effect it has had in subsiding the moss—the trenching, levelling, or other preliminary operations that may have been performed on the surface—the mode of planting—kinds, sizes, and number of trees planted per acre—and their relative progress and value, as compared with plantations of a similar age and description grown on other soils in the vicinity.

CLASS II.

DISTRICT COMPETITIONS.

REGULATIONS 1926.

Grants in aid of District Competitions *for* 1927 *must be applied for before* *1st November* 1926, *on Forms to be obtained from the Secretary.*

When a Money Grant has expired, the District cannot apply again for another Money Grant for four years.

Section I.—GRANTS TO DISTRICT SOCIETIES FOR HORSES, CATTLE, SHEEP, AND PIGS.

1. Class of Stock—Limit of Grants, £340.—The Highland and Agricultural Society will make Grants to District Societies for prizes for *Breeding Animals* of any of the following Classes of Stock, viz. :—

Cattle.

Shorthorn.
Aberdeen-Angus.
Galloway.
Belted Galloway.
Highland.
Ayrshire.
British-Friesian.
Red Poll.
Jersey.
Shetland.

Horses.

Draught Horses.
Hunters.
Hackneys.
Ponies.
Shetland Ponies.

Sheep.

Blackface.
Cheviot.
Border Leicester.
Half-Bred.
Shropshire.
Oxford-Down.
Suffolk.
Wensleydale.

Pigs.

Any Pure Breed.

Cross-bred[1] animals are not eligible. The Prizes must be confined to *Breeding* Animals; "bullocks," "geldings," "wethers," and "hog pigs" are excluded.

2. All Competitions must be at the instance of a local Society. A Committee of Management shall be appointed, and the Convener of the Committee must be a Member of the Highland and Agricultural Society.

3. Grant to District, £12.—The portion of the Grant to any one District Society shall not exceed the sum of £12 in any one year.

4. Allocation of Grant.—The Grant from the Highland and Agricultural Society is not to be applied as a Grant in aid of the Premiums offered by the Local Society, but must be offered in the form of separate Prizes for the Animals chosen; **and the Prizes must be announced in the Premium List and Catalogue of the Show as "given by the Highland and Agricultural Society."**

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[1] *Exceptions to this rule may, however, be authorised by the Board of Directors, on application. The Directors are prepared to consider applications from local Societies which desire to use their grants, or part thereof, as prizes for cross-bred calves and one-year-old cross-bred cattle.*

5. Continuance of Grant Three Years.—The Money Grant shall continue for three alternate years, provided always that the District Society shall, in the two intermediate years, continue the competition by offering Premiums for the same class of Stock as that selected in each previous year to compete for the Highland and Agricultural Society's Prizes. If no competition takes place for two years the Grant expires.

6. When it is agreed to hold the General Show of the Society in any district, no provincial show shall be held in that district in the months of June, July, or August.

7. Medals in Intermediate Years.—In the two alternate years the Highland and Agricultural Society will place three Silver Medals at the disposal of the District Societies, for the same classes of Stock as those for which the Money Premiums are offered, provided that not less than three lots are exhibited in the same class.

8. Rules of Competition.—The Rules of Competition for the Premiums, the Funds for which are derived from Grants of the Highland and Agricultural Society, shall be such as are generally enforced by the Society receiving the Grant for Premiums offered by itself.

9. Area and Parishes—Five Parishes.—When making application for Grants from the Highland and Agricultural Society, the District Society must delineate the area and the number of parishes comprised in the district, and, *except in special cases*, no District Society shall be entitled to a Grant whose show is not open to at least *five* Parishes.

10. Reports.—Blank Forms for Reports will be furnished to the Secretaries of the different District Societies. Both in the years when the Grant is offered and in the **two intermediate years**, detailed reports of the competition must be given on these Forms and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Show, and in no case later than **1st November**. These reports are subject to the approval of the Directors of the Highland and Agricultural Society, against whose decision there shall be no appeal. All Reports must be signed and certified as marked in the Form. The Grant will lapse if no Report is lodged.

11. Grants—When Paid.—The Grants made to District Societies will be paid in December after the Reports of the awards of the prizes have been received and found to be in order and passed by the Board of Directors, the Money Grants being paid to the Secretaries of the Local Societies and the Medals sent direct to the winners. *The Secretary of the District Society must not on any condition whatever pay any premium offered by the Highland and Agricultural Society until he has been informed that the awards are in order and has received the Grant from the Highland and Agricultural Society.*

12. Renewal of Application.—No application for renewal of a Money Grant to a District Society will be entertained until the expiration of *four years* from the termination of the last Grant.

13. Disposal of Applications.—In disposing of applications for District Grants, the Directors of the Highland and Agricultural Society shall keep in view the length of interval that has elapsed since the expiration of the last Grant, giving priority to those District Societies which have been longest off the list.

DISTRICTS.

Final Year.

1. Easter Ross Farmers' Club.—*Convener*, C. W. Mundell, Delny; *Secretary*, George D. Gill, Commercial Bank Buildings, Tain. Granted 1914. (In abeyance 1914, 1915, 1916, 1917, 1918, 1919, and 1922—no Show held.) (In abeyance 1923, on account of Inverness Show.)

2. DUNBLANE AGRICULTURAL SOCIETY.—*Chairman of Directors*, A. H. Anderson, J.P., The Firs, Dunblane; *Secretary*, John Stewart, Solicitor, Dunblane. Granted 1921. (In abeyance 1921.)
3. STRATHAVEN AND DISTRICT AGRICULTURAL EXPOSITION SOCIETY.—*Convener*, Peter Meikle, M.R.C.V.S., Avonholme, Strathaven; *Secretary*, W. Wilson, Royal Bank, Strathaven. Granted 1921. (In abeyance 1925, on account of Glasgow Show.)
4. UPPER DONSIDE AGRICULTURAL SOCIETY.—*Convener*, James Stewart, Nether Ord, Auchindoir, Rhynie; *Secretary*, Alexander Kellas Hillockhead, Towie, Cushnie. Granted 1922.
5. VALE OF ALFORD AGRICULTURAL ASSOCIATION.—*Convener*, W. A. Mitchell of Auchnagathle, Keig, Whitehouse; *Secretary*, George F. Laing, Mayfield, Whitehouse. Granted 1922.
6. WESTERN DISTRICT OF MID-LOTHIAN AGRICULTURAL SOCIETY.—*Convener*, James Pettigrew, Bankton, Mid-Calder; *Secretary*, J. B. Small, Clydesdale Bank, Mid-Calder. Granted 1922.

2nd Year.

7. LOCHABER AGRICULTURAL SOCIETY.—*Convener*, Cameron of Lochiel, Achnacarry, Spean Bridge; *Secretary*, Alistair MacDonald, Achintree, Fort-William. Granted 1924.

1st Year.

8. ARRAN FARMERS' SOCIETY.—*Convener*, James J. Morton, Machrie Farm, Isle of Arran; *Secretary*, R. W. Campbell, Bank House, Blackwaterfoot, Arran. Granted 1926.
9. BUTE AGRICULTURAL SOCIETY.—*Convener*, Robert Mackay, Ballochmartin, Millport; *Secretary*, Dugald M'Alister, Bank of Scotland, Rothesay. Granted 1926.
10. CARRICK FARMERS' SOCIETY.—*Convener*, John G. M'Cubbin, King's Arms Hotel, Maybole; *Secretaries*, J. & J. M. Gibson, Royal Bank, Maybole. Granted 1926.
11. MULL AND MORVERN AGRICULTURAL SOCIETY.—*Convener*, J. H. Munro Mackenzie of Calgary, Calgary, Isle of Mull; *Secretary*, A. A. MacGilp, The Clydesdale Bank, Limited, Tobermory, Isle of Mull. Granted 1926.
12. STRATHDON AGRICULTURAL ASSOCIATION.—*Convener*, Charles Christie, Estates Office, Strathdon; *Secretary*, John F. Philip, Hawthorn Cottage, Strathdon. Granted 1926.
13. STRATHSPEY FARMERS' CLUB.—*Convener*, J. Grant Smith, Inverallan, Grantown-on-Spey; *Secretary*, John G. MacDougall, Dunolly, Grantown-on-Spey. Granted 1926.
14. UNITED EAST LOTHIAN AGRICULTURAL SOCIETY.—*Convener*, Thomas Elder of Stevenson Mains, Haddington; *Secretary*, William Burnet, Solicitor, Haddington. Granted 1926.

(In Intermediate Year—3 Silver Medals.)

15. AIRD AND STRATHGLASS AGRICULTURAL, HORTICULTURAL, AND INDUSTRIAL SOCIETY.—*Convener*, Donald Maclean, Teafush, Beauly; *Secretary*, John Campbell, Commercial Bank of Scotland, Beauly. Granted 1921. (In abeyance 1923, on account of Inverness Show.) (In abeyance 1925—no Show held.)
16. BLACK ISLE FARMERS' SOCIETY.—*Convener*, John Munro, Blairdhu, Killearnan; *Secretary*, John Mann, Bog Farm, Munlochy. Granted 1922. (In abeyance 1923, on account of Inverness Show).

17. STIRLING AGRICULTURAL SOCIETY.—*Convener*, James M'Laren, Cornton, Bridge of Allan; *Secretary*, John M. Mailer, 48 Port Street, Stirling. Granted 1922. (Not awarded 1923.)
18. STRATHORD AGRICULTURAL SOCIETY.—*Convener*, James Gorrie, Drummond Hall, Stanley; *Secretary*, D. M'Gregor, Rosebank, Bankfoot. Granted 1922. (In abeyance 1924, on account of Perth Show.)
19. BUCHAN AGRICULTURAL SOCIETY.—*Convener*, William E. Hutchison of Cairngall, Longside; *Secretary*, James A. Smith, Bank House, Strichen. Granted 1923.
20. CLUNY, MONYMUSK, MIDMAR, AND KEMNAY AGRICULTURAL ASSOCIATION.—*Convener*, Charles Crombie, Cluny Home Farm, Sauchen; *Secretary*, Edward Milne, Cairndail, Sauchen, Aberdeenshire. Granted 1923.
21. DUNOON AGRICULTURAL SOCIETY.—*Convener*, Duncan C. Whyte, of Glenmasson, Sandbank; *Secretary*, John Dobie, Clydesdale Bank, Dunoon. Granted 1923.
22. KILFINICHEN AND KILVICKEON AGRICULTURAL SOCIETY.—*Convener*, Duncan Cameron, Sheepknowe, Bunessan, Mull; *Secretary*, Flora R. MacKechnie, Uisken, Bunessan, Mull. Granted 1923.
23. KINCARDINESHIRE FARMERS' CLUB.—*Convener*, William M. Melvin, Bridgemill, Laurencekirk; *Secretary*, James B. Connon, 12 Ann Street, Stonehaven. Granted 1923.
24. SKYE AGRICULTURAL SOCIETY.—*Convener*, Colonel Kenneth L. MacDonald, D.S.O., Tote, Portree; *Secretary*, George Calder, Bank of Scotland House, Portree. Granted 1923.
25. WIGTOWN AGRICULTURAL SOCIETY.—*Convener*, William Sproat, Balfern, Kirkinner, Boreland, Whauphill; *Secretary*, Gavin Coupland, Clydesdale Bank, Newton-Stewart. Granted 1923.
26. LOWER WARD OF RENFREWSHIRE AGRICULTURAL SOCIETY.—*Convener*, Sir Hugh Shaw Stewart, C.B., of Greenock and Blackhall, Bart., Ardgowan, Inverkip; *Secretary*, Arthur Murray, The Commercial Bank of Scotland, Limited, 22 West Blackhall Street, Greenock. Granted 1924. (In abeyance 1924—no Show held.)
27. WEST TEVIOTDALE AGRICULTURAL SOCIETY. — *Convener*, Charles W. Grieve, Branxholm Park, Hawick; *Secretary*, W. S. Nichol, Wilton Bank, Hawick. Granted 1924. (No competition, 1925.)
28. DEESIDE AGRICULTURAL ASSOCIATION. — *Convener*, John Duguid, Bieldside, Aberdeen; *Secretary*, Robert Adam, 2 Union Terrace, Aberdeen. Granted 1925.
29. EAST OF FIFE AGRICULTURAL SOCIETY.—*Convener*, Colonel J. H. Purves, D.S.O., of Kinaldy, St Andrews; *Secretary*, George R. Dingwall, Colinsburgh. Granted 1925.
30. GARRIOCH FARMERS' CLUB.—*Convener*, Provost C. W. Beattie, Emerald Bank, Insch; *Secretary*, Alexander W. Melvin, Templand, Insch. Granted 1925.
31. INVERURIE AGRICULTURAL SOCIETY.—*Convener*, William Strachan, Balquhain Mains, Pitcaple; *Secretary*, W. Gordon, Union Bank, Inverurie. Granted 1925.
32. ST MARY'S ISLE ESTATES AND DISTRICT AGRICULTURAL SOCIETY.—*Convener*, James Phillips, Carse, Kirkcudbright; *Secretaries*, Messrs Gibson & Montgomery, Solicitors, Kirkcudbright. Granted 1925.
33. YTHANSIDE FARMERS' CLUB.—*Convener*, Charles Hay Smith, Belscamphie, Slains, Ellon; *Secretary*, John Walker, 34 Bridge Street, Ellon. Granted 1925.

In 1926.

Nos. 1, 2, 3, 4, 5, and 6 are in competition for the final year.

No. 7 is in competition for the second year.

Nos. 8, 9, 10, 11, 12, 13 and 14 are in competition for the first year.

Nos. 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, and 33 are in intermediate year and compete for local Premiums. (See Rules 5 and 7.)

SECTION II.—GRANTS TO HORSE ASSOCIATIONS, &c., FOR STALLIONS FOR AGRICULTURAL PURPOSES.

1. The Highland and Agricultural Society will make Grants to Horse Associations and other Societies in different districts engaging Stallions for agricultural purposes. The total sum expended by the Highland and Agricultural Society in such Grants shall not exceed the sum of £210 in any one year.

2. The portion of the Grant to any one Association or Society shall not exceed the sum of £15 in any one year.

3. The Grant will be available only for Stallions which, for the year to which the Grant applies, are Registered in the Register of Certified Draught Stallions published by the Board of Agriculture. (For information regarding the Registration of Stallions, apply to the Secretary of the Board of Agriculture, 4 Whitehall Place, London, S.W.)

4. The Grant will continue for three years provided the Association receiving the Grant shall hire a Registered Stallion in the two intermediate years.

5. In the event of a Horse not being engaged in any one year while the provisions of the Grant are in force, the Grant made by the Highland and Agricultural Society will cease.

6. RULES 2 (Committee and Convener), 10 (Reports), 11 (Time of Payment), 12 (Renewal of Grant), and 13 (Disposal of Applications) applicable to Section 1, shall be applicable to this Section.

DISTRICTS.

Final Year.

1. DEESIDE STOCK IMPROVEMENT SOCIETY.—*Convener*, William Brown, B.Sc., Silverbank, Banchory; *Secretary*, William S. Taylor, South Hirn, Banchory. Granted 1922.
2. ISLAY SMALL LANDHOLDERS' SOCIETY.—*Convener and Secretary*, Robert Cullen, Bridgend, Islay. Granted 1922.
3. MORAY STOCK IMPROVEMENT SOCIETY.—*Convener*, Gordon R. Shiach of Rosebrae, Elgin; *Secretary*, W. Rose Black, Bank Buildings, Elgin. Granted 1922.
4. SHAPANSEY AGRICULTURAL ASSOCIATION.—*Convener*, James Johnston, of Coubister, Orphir House, Orphir, Orkney; *Secretary*, D. L. Kemp, Gatehouse, Shapansey, Orkney. Granted 1922.
5. STONEHAVEN DISTRICT HORSE-BREEDING ASSOCIATION.—*Convener*, William Hunter, Redcloak, Stonehaven; *Secretary*, James B. Connon, 12 Ann Street, Stonehaven. Granted 1922.

2nd Year.

6. CAITHNESS HORSE-BREEDING ASSOCIATION.—*Convener*, George King, Berridale R.S.O., Caithness; *Secretary*, A. G. Doull, Berridale R.S.O., Caithness. Granted 1924.
7. CARSE OF DUNDEE DISTRICT STALLION SOCIETY.—*Convener*, John Murray, Balruddery Farm, Invergowrie; *Secretary*, Joseph Murray, Balruddery Farm, Invergowrie. Granted 1924.

1st Year.

8. BUCHLYVIE AND VALE OF MONTEITH HORSE-BREEDING AND STOCK IMPROVEMENT SOCIETY, LIMITED.—*Convener* and *Secretary*, John Drysdale, 55 Colinton Road, Edinburgh. Granted 1926.
9. CENTRAL FORFARSHIRE HORSE-BREEDING SOCIETY.—*Convener*, James Scott, Ascurry, Letham, Forfar; *Secretary*, Walter R. Findlay, Ochterlony Mains, Guthrie. Granted 1926.
10. EAST MAINLAND CO-OPERATIVE HORSE-BREEDING SOCIETY, LIMITED.—*Convener*, Alexander Calder, Sebay, Tankerness, Kirkwall; *Secretary*, David J. Laughton, Castle Quoyburray, Kirkwall. Granted 1926.
11. LAUDERDALE AND WEST OF BERWICKSHIRE AGRICULTURAL SOCIETY.—*Convener*, Major Robert W. Sharpe of The Park, Earlston; *Secretary*, George L. Broomfield, Lauder. Granted 1926.

Intermediate Year—Grant in Abeyance.

12. LOWER DONSIDE HORSE-BREEDING SOCIETY, LIMITED. — *Convener*, Patrick Forbes, Tillybin, Kintore; *Secretary*, Neil Smith, Kinellar, Aberdeenshire. Granted 1923.
13. SOUTH RONALDSHAY AND BURRAY HORSE-BREEDING SOCIETY.—*Convener*, John Tomison, Halcro, South Ronaldshay, Orkney; *Secretary*, George A. Ryrie, Hall of Herston, South Ronaldshay Orkney. Granted 1923.
14. UPPER NITHSDALE HORSE SOCIETY.—*Convener*, Charles W. Ralston, Dubton, Thornhill; *Secretary*, William M. Henderson, 1 West Morton Street, Thornhill. Granted 1923.
15. VALE OF ALFORD CLYDESDALE HORSE-BREEDING ASSOCIATION.—*Convener*, William Brown, M.R.C.V.S., Silverbank, Banchory; *Secretary*, Robert Carr, Culhay, Forbes, Alford. Granted 1923.
16. WEST OF FIFE CLYDESDALE ENTIRE HORSE SOCIETY.—*Convener*, Robert Jeffrey, Drumfin, Torryburn; *Secretary*, John B. Tulloch, The Dales, Inverkeithing. Granted 1923.
17. CROMER AND UPPER DEESIDE HEAVY HORSE-BREEDING SOCIETY.—*Convener*, William Hunter, Old Town of Kincraigie, Tarland; *Secretary*, Duncan Reid, Craskins, Tarland. Granted 1925.

In 1926.

Nos. 1, 2, 3, 4, and 5 are in competition for the final year.
Nos. 6 and 7 are in competition for the second year.
Nos. 8, 9. 10, and 11 are in competition for the first year.
Nos. 12, 13, 14, 15, 16, and 17 are in abeyance, and compete for local premiums. (See Rule 4.)

SPECIAL GRANTS.

ANNUAL.

£20 to the Ayrshire Agricultural Association, to be competed for at the Dairy Produce Show at Kilmarnock.—*Chairman of Directors*, Lieut.-Colonel W. T. R. Houldsworth of Kirkbride, Maybole; *Secretary*, John Howie, 58 Alloway Street, Ayr. Granted 1872. (No competition 1914, 1915, 1916, 1917, 1918, and 1919.)

£15 to the Northern Arts and Crafts Society.—*Convener*, Miss G. H. Macintosh, Raigmore, Inverness; *Joint-Secretaries*, Mrs Gordon Cumming, Stoneyfield, and Miss Mary Mackintosh, Raigmore, Inverness. Granted 1922. (In abeyance 1923—no competition.)

The British Dairymaids' Association.—*Convener*, Mrs Ogilvy, Fenton Newmains, Drem; *Secretary*, Miss Mary B. Baillie, Rosebank, Currie. 1 Minor Gold Medal and 1 Medium Silver Medal for Champion Butter-making Competitions. Granted 1908. (In abeyance 1914, 1915, 1916, 1917, 1918, and 1923—no competition.)

IN ALTERNATE YEARS.—GRANTS IN 1926.

£5 to Shetland Agricultural Society.—*Convener*, J. J. Brown, County Assessor, Lerwick; *Secretary*, James M'Intosh, Ronald Street, Lerwick. Granted 1893. (In abeyance—no Show in 1914, 1915, 1916, 1917, 1918, 1919, and 1925.)

£3 to North Uist Agricultural Society.—*Convener*, Dr M. T. Mackenzie, J.P., Scolpaig, North Uist; *Secretary*, H. H. Mackenzie, J.P., 143 Warrender Park Road, Edinburgh. Granted in 1915 for 3 alternate years. (In abeyance 1915, 1916, 1917, 1918, 1919, 1924, and 1925—no Show held.)

£3 to Rousay Agricultural Society, Orkney.—*Convener*, George Gibson, Avelshay, Rousay, Orkney; *Secretary*, John Harrold, Springfield, Rousay. Granted 1903. (No Show 1915, 1916, 1917, or 1918.)

£3 to South Ronaldshay and Burray Agricultural Society, Orkney.—*Convener*, George A. Ryrie, Hall of Herston, South Ronaldshay; *Secretary*, George Esson, St Margaret's Hope, Orkney. Granted 1904. (In abeyance 1917 and 1918—no Show held.)

GRANTS IN ABEYANCE, 1926.

£3 to Orkney Agricultural Society.—*Convener*, Thomas Clark, Swanbuster, Orphir, Orkney; *Secretary*, D. B. Peace, jun., 4 Old Scapa Road, Kirkwall. Granted 1883. (No Show in 1915, 1916, 1917, and 1918.)

£3 to Sanday Agricultural Society, Orkney.—*Convener*, W. Cowper Ward, Scar House, Sanday, Orkney; *Secretary*, James Cromarty, Elsness, Sanday, Orkney. Granted 1902. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)

£3 to East Mainland Agricultural Society, Orkney.—*Convener*, James G. Skea, Barns of Ayre, Deerness; *Secretary*, D. J. Laughton, Castle Quoyburray, Kirkwall. Granted 1898. (In abeyance 1917 and 1918—no Show held.)

£3 to West Mainland Agricultural Society, Orkney.—*Convener*, James M. H. Robertson, Lyking, Sandwick, Orkney; *Secretary*, James Wood, Skaill Farm, Sandwick, Stromness, Orkney. Granted 1900. (No Show 1916, 1917, or 1918.)

£3 to Walls and Hoy Agricultural Society.—*Convener*, Robert Cutt, Melsetter, Stromness; *Secretary*, William Sutherland, The Old Custom House, Longhope, Orkney. Granted 1923 (for three alternate years).

£3 to Kilmuir (Skye) Show Committee.—*Convener and Secretary*, Angus Ross, Rha, Uig, Skye. Granted 1923 (for three alternate years).

SCOTTISH WOMEN'S RURAL INSTITUTES.

A sum not exceeding £100 in each year will be given in special grants to Federations of Scottish Women's Rural Institutes. The amount of any one grant shall not exceed £10. Any Federation which has received a grant for two consecutive years shall not be eligible to again apply until after the expiry of two years.

£10 to Caithness Federation of Scottish Women's Rural Institutes.—*President*, George Harrold, Wick; *Secretary*, Miss Elizabeth M. Green, Keiss, by Wick. Granted 1925.

£10 to Perth and Kinross Federation of Scottish Women's Rural Institutes.—*President*, Miss Haldane, Cloan, Auchterarder; *Secretary*, Mrs Struthers, Schoolhouse, Meigle. Granted 1925.

£10 to Aberdeen County Federation of Scottish Women's Rural Institutes.—*Convener*, W. Anderson, Sapoch, Old Meldrum; *Secretary*, Alexander F. Smith, 89 Union Street, Aberdeen. Granted 1926.

£10 to East Lothian Federation of Scottish Women's Rural Institutes.—*Convener*, Mrs Skene-Tytler, Keith Marischal, Humbie, East Lothian; *Secretary*, Miss J. N. Tweedie, Eweford, Dunbar. Granted 1926.

£10 to Roxburghshire Federation of Scottish Women's Rural Institutes.—*Convener*, Hon. Mrs Scott, Harden, Hawick; *Secretary*, Mrs Jamieson, Langshaw, Galashiels. Granted 1926.

£10 to Wigtownshire Federation (Rhins Branch) of Scottish Women's Rural Institutes.—*Convener*, Mrs Wallace, Cairnryan, Stranraer; *Secretary*, Margaret Fyfe, Meoul Schoolhouse, Sandhead, Stranraer. Granted 1926.

MEDALS IN AID OF PREMIUMS GIVEN BY LOCAL SOCIETIES.

The Society, being anxious to co-operate with local Associations, will give a limited number of Silver Medals annually to Societies, not on the list of Cattle, Horse, or Sheep Premiums, in addition to the Money Premiums awarded in the Districts, for—

1. Best Bull, Cow, or Heifer of any pure breed included in Section 1.
2. Best Stallion, or Mare of any pure breed included in Section 1.
3. Best Tup, or Pen of Ewes of any pure breed included in Section 1.

4. **Best Boar, Sow, or Breeding-Pig of any pure breed.**
5. **Best Pens of Poultry.**
6. **Best Sample of any variety of Wool.**
7. **Best Sample of any variety of Seeds.**
8. **Best managed Farm.**
9. **Best managed Green Crop.**
10. **Best managed Hay Crop.**
11. **Best managed Dairy.**
12. **Best Sweet-Milk Cheese.**
13. **Best Cured Butter.**
14. **Best Fresh Butter.**
15. **Best collection of Roots.**
16. **Best kept Fences.**
17. **Best Sheep-Shearer.**
18. **Most expert Hedge-Cutter.**
19. **Most expert Labourer at Draining.**
20. **Best Maker of Oat-Cakes.**

It is left to the local Society to choose out of the foregoing list the classes for which the Medals are to be competed.

The Medals are granted for two years, and lapse if not awarded in those years.

No Society shall receive more than two Medals in any year.

Aberdeenshire.

1. ABERDOUR AND NORTH-EASTERN AGRICULTURAL ASSOCIATION.—*Convener*, M. J. Keith, Aberdour House, Fraserburgh ; *Secretary*, Alexander Rannie, Hillhead, Pitullie, Fraserburgh. 2 Medals. Granted 1924. (In abeyance 1925—not awarded.)

Argyllshire.

2 NETHERLORN FARMERS' SOCIETY.—*Convener*, Thomas Tyson, Lagganbeg, Kilninver, by Oban ; *Secretary*, Neil MacDougall, Balvicar, by Oban. Granted 1926.

Ayrshire.

3. BEITH FARMERS' SOCIETY.—*Convener*, John Crawford, Maurahead, Beith ; *Secretary*, Alexander D. Osborne, 37 Eglinton Street, Beith. 2 Medals. Granted 1924. (In abeyance 1924—no Show held.)

Dumfriesshire.

4. ESKDALE AND LIDDESDALE AGRICULTURAL SOCIETY. — *Convener*, Richard Common, Merkledale, Langholm : *Joint-Secretaries*, James J. Paterson, Terrona, Langholm, and J. M'George, Solicitor, Langholm. 2 Medals. Granted 1924. (In abeyance 1924 — not awarded.)

Kincardineshire.

5. FETTERCAIRN FARMERS' CLUB.—*Convener*, G. H. Russell, The Burn, Edzell ; *Secretary*, George T. Brown, Woodmyre, Edzell. Granted 1926.

Lanarkshire.

6. SHETTLESTON AND CHRYSTON DISTRICT AGRICULTURAL SOCIETY.—*Convener*, Allan Meikle, Alton, Tollcross, Glasgow; *Secretary*, John Watson, 24 St Vincent Place, Glasgow. Granted 1925.

Mid-Lothian.

7. DALKEITH AGRICULTURAL SOCIETY.—*Convener*, John C. Stewart, Newton, Dalkeith; *Secretary*, James W. Speedy, Braeside, Liberton. Granted 1925.

Orkney.

8. ROUSAY AGRICULTURAL SOCIETY.—*Convener*, George Gibson, Avelshay, Rousay; *Secretary*, John Harrold, Springfield, Rousay. Granted 1925.

Stirlingshire.

9. DENNY AND DUNIPACE AGRICULTURAL SOCIETY.—*Convener*, Andrew Dunn, Duncarron, Denny; *Secretary*, John M'Millan, 37 Stirling Street, Denny. 2 Medals. Granted 1924. (In abeyance 1924—no Show held.)

Sutherlandshire.

10. KINCARDINE AND CREICH AGRICULTURAL SOCIETY.—*Convener*, Sir Robert Brook, Bart., Fearn Lodge, Ardgay; *Secretary*, D. Munro, Bank of Scotland House, Bonar Bridge. Granted 1925. (In abeyance 1925—not awarded.)

11. SUTHERLAND CROFTERS' SHOW.—*Convener and Secretary*, James Mann, Sutherland Estate Offices, Golspie. 2 Medals. Granted 1924. (In abeyance 1925—not awarded.)

Applications from other Districts must be lodged with the Secretary of the Society *by 1st November next.*

RULES OF COMPETITION.

1. All Competitions must be at the instance of a local Society.

2. The classes for which Medals are granted must be in accordance with the list at page 71. The Committee shall select the classes, and specify them in the Report.

3. A Committee of Management shall be appointed, and the Convener of the Committee must be a Member of the Highland and Agricultural Society.

4. The Money Premiums given in the District must be not less than £2 for each Medal claimed.

5. The Medal for Sheep-Shearing shall always accompany the highest Money Premium.

6. There must not be fewer than three competitors in all the classes.

7. Regarding Reports, despatch of Medals, and application for renewal of Grant, Rules 10 and 11, Section I., will apply.

8. When a grant of Medals has expired, the District cannot apply again for Medals for two years.

PLOUGHING COMPETITIONS.

The Minor Silver Medal will be given to the winner of the first Premium at Ploughing Competitions, provided a Report in the following terms on the official form is made to the Secretary, within one month of the Competition, by a Member of the Society. Forms of Report to be had on application.

FORM OF REPORT.

I, of , Member of the Highland and Agricultural Society, hereby certify that I attended the Ploughing Match of the Association at in the county of on the when ploughs competed ; of land were assigned to each, and hours were allowed for the execution of the work. The sum of £ was awarded in the following proportions, viz. :—

[*Here enumerate the names and designations of successful Competitors.*]

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Ploughing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.

2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society, 3 George IV. Bridge, Edinburgh.

3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.

4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.

5. A Member can report only one Match ; and a Ploughman cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal there must have been twelve ploughs in Competition, and not less than Three Pounds awarded in Prizes by the local Society. The Medal to be given to the winner of the first prize.

7. The Local Society or Ploughing Association shall decide what class of ploughs shall compete for the Medal, and if so agreed, may offer it for competition to the class of plough most generally in use in the district.

8. The Local Society or Committee may, if they desire, arrange to let each Ploughman have one person to guide the horses for the first two and the last two furrows, but in no case shall Ploughmen receive any other

assistance, and their work must not be set up or touched by others. Attention should be given to the firmness and sufficiency of the work below, more than to its neatness above the surface.

9. The Local Committee is required to fix the time to be allowed for ploughing the portion of land, and they are recommended that the time be at the rate of not more than ten hours per imperial acre on light land, and fourteen hours on heavy or stony land.

NOTE.—The attention of the Directors of the Society has frequently been drawn to certain irregularities which have occurred in connection with the conduct of Ploughing Matches and the completion of the Reports thereon. Complaints have been made (*a*) that the allotted amount of ground has not been ploughed, within the specified time, by the competitor awarded the first prize; (*b*) that the Report sent to this Society has been signed by a Member of the Society who was not present at the Match. It has to be pointed out that any infringement of the above Rules by a Local Society or Ploughing Association will render that Society or Association liable, at the discretion of the Board of Directors, to be debarred from receiving the Society's Medals in future.

HOEING COMPETITIONS.

The Minor Silver Medal will be given to the winner of the first Premium at Hoeing Competitions, provided a Report in the following terms on the official form is made to the Secretary within a month of the Competition by a Member of the Society. Forms of Report to be had on application.

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Hoeing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.

2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society, No. 3 George IV. Bridge, Edinburgh.

3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.

4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.

5. A Member can only report one Match; and same Competitor cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal there must have been twelve hoes in Competition, and not less than Three Pounds awarded in prizes by the local Society. The Medal to be given to the winner of the first prize.

7. The time to be allowed to be decided by the local Committee, but in no case to exceed two hours for two drills of 100 yards each, the third drill being unoccupied, so that Competitors do not interfere with their neighbour's work.

8. Competitors must finish their work as they go along—no turning back or after-dressing allowed. Handpicking or transplanting shall be strictly prohibited.

9. A Committee shall be appointed to watch the work, and any Competitor found transplanting or otherwise not complying with the Rules shall have his number withdrawn, and be debarred from receiving any prize which might otherwise have been awarded to him.

NOTE.—Medals will be awarded under similar conditions for Competitions in hand-singling.

LONG SERVICE CERTIFICATES AND MEDALS.

Certificates and Medals for long service are awarded by the Society to farm servants, male or female, having an approved service in Scotland of not less than thirty years—(*a*) with one employer on the same or different holdings; (*b*) on the same holding with different employers. These Certificates and Medals will be issued as applications are received.

Forms to be obtained from the Secretary.

War Service to count towards the time required for qualification, where farm servants have returned to same service or employment with same farmer or his family.

CLASS III.

COTTAGES AND GARDENS.

The following Premiums are offered for Competition in the Parishes after-mentioned.

The Premiums are granted for two years.

PREMIUMS FOR BEST KEPT COTTAGES AND GARDENS.

1.	Best kept Cottage	£1	0	0
	Second best	0	10	0
2.	Best kept Cottage Garden	1	0	0
	Second best	0	10	0

RULES OF COMPETITION.

1. Competitions may take place in the different parishes for Cottages and Gardens, or for either separately.

2. The occupiers of Lodges at Gentlemen's Approach Gates and Gardeners' Houses are excluded, as well as others whom the Committee consider, from their position, not to be entitled to compete. The inspection must be completed by the 1st of October. In making the inspection, the Conveners may take the assistance of any competent judges.

3. It is left to the Committee of the District to regulate the maximum annual rent of the Cottages, which may, with the garden, be from £5 to £7.

4. To warrant the award of full Premiums, there must not be fewer than three competitors in each class. If there are less than three competitors in each class, only half Premium will be awarded.

5. A person who has gained the highest Premium cannot compete again.

6. If the Cottage is occupied by the proprietor, the roof must be in good repair; if the roof is thatch, it must be in good repair, though in the occupation of a tenant. The interior and external conveniences must be clean and orderly; the windows must be free of broken glass, clean, and affording the means of ventilation. Dunghills, and all other nuisances, must be removed from the front and gables. In awarding the Cottage Premiums, preference will be given to Competitors who, in addition to the above requisites, have displayed the greatest taste in ornamenting the exterior of their houses, and the ground in front and at the gables.

7. In estimating the claims for the Garden Premiums, the judges should have in view—the sufficiency and neatness of the fences and walks; the cleanness of the ground; the quality and choice of the crops; and the general productiveness of the garden.

8. Reports, stating the number of Competitors, the names of successful parties, and the nature of the exertions which have been made by them, must be lodged with the Secretary of the Highland and Agricultural Society *on or before the* 1*st November next.*

9. When a grant of Money has expired, the District cannot apply again for aid for four years.

Parishes desirous of these Premiums must lodge applications with the Secretary *on or before the* 1*st November next.*

(*No Money Grants offered in* 1926.)

MEDALS FOR COTTAGES AND GARDENS, OR GARDEN PRODUCE, POULTRY, AND BEE-KEEPING.

1. The Society will give annually one or two Minor Silver Medals to a limited number of local Associations or individuals, who establish Competitions and Premiums for Cottages, Gardens, Garden Produce, or Bee-Keeping. The Medals will be granted for two years.

2. The Medals may be offered in any two of the following sections, *but under no circumstances will the two Medals be given in one of the sections:—*

(1) Best kept Cottage or best kept Cottage and Garden. (One Medal only.)

(2) Best kept Garden. (One Medal only.)

(3) Best Collection of Garden Produce—Flowers excluded. (One Medal only.)

(4) Best Pen of Poultry.

(5) Honey. (One Medal only.)

3. The annual value of each Cottage, with the ground occupied in the parish by a Competitor, must not exceed £20. The occupiers of Lodges at Gentlemen's Approach Gates, and Gardeners in the employment of others, are not entitled to compete.

4. If Competition takes place for Garden Produce, such produce must be *bona fide* grown in the Exhibitor's Garden. He will not be allowed to make up a collection from any other Garden. The produce must consist of Vegetables, or Vegetables and Fruit (not Fruit alone). Flowers are excluded.

5. The Honey must be the produce of the Exhibitor's own Hives.

6. To warrant the award of a Medal, there must not be fewer than three Competitors.

7. Blank forms for Reports of Competitions will be furnished to the Secretaries of the different Districts. These must, in all details, be completed and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Show, and in no case later than *1st November*, for the approval of the Directors, against whose decisions there shall be no appeal.

8. When a grant of Medals has expired, the District cannot apply again for aid for two years, and if no competition takes place in a District for two years the grant expires.

9. Applications for these Medals must be made *before 1st November next.*

Aberdeenshire.

1. CRUDEN HORTICULTURAL SOCIETY.—*Convener*, Robert Brand, Ardiffery, Port Erroll; *Secretary*, James Hendry, Schoolhouse, Hatton, Aberdeen. 2 Medals. Granted 1925. (In abeyance 1925—no competition.)

FIRST EDITION.]

NOTE.—From 23rd June to 1st July all communications should be addressed to "The Secretary, Secretary's Office, Showyard, Kelso."

Address for Telegrams—"SOCIETY," EDINBURGH.
Telephone No.—CENTRAL 3655.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

GENERAL SHOW OF STOCK, IMPLEMENTS, AND MACHINERY

KELSO

29TH, 30TH JUNE, 1ST AND 2ND JULY 1926.

LAST DAYS OF ENTRY.

IMPLEMENTS AND OTHER ARTICLES—Monday, 12th April.

CATTLE, HORSES, SHEEP, GOATS, AND PIGS—Thursday, 6th May.

(*Separate Form for* EACH *Entry.*)

POULTRY, DAIRY PRODUCE, WOOL, RURAL INDUSTRIES, AND HORSE-SHOEING—Thursday, 6th May.

RABBITS AND HONEY—Thursday, 27th May.

No Entry at ordinary fees taken later than those which are received at the Society's Office, Edinburgh, by first post, or 10 o'clock, on Friday morning (7th May). Late Entries for Cattle, Horses, Sheep, Goats, and Pigs taken on payment of 10s. additional for each entry (Poultry, Dairy Produce, Wool, Rural Industries, and Horse-shoeing at double fees) till 10 o'clock Wednesday morning (12th May) at the Society's Office, Edinburgh.

President of the Society.

HIS GRACE THE DUKE OF ROXBURGHE, K.T., M.V.O.

Chairman of the Board of Directors.

COLONEL F. J. CARRUTHERS OF DORMONT, LOCKERBIE.

Convener of the Local Committee.

ATHOLE S. HAY OF MARLEFIELD, ROXBURGH.

The District connected with the Show comprises the Counties of Berwick Peebles, Roxburgh, and Selkirk.

REGULATIONS.

GENERAL CONDITIONS.

1. The Competition, except where otherwise stated in the Premium List, is open to Exhibitors from all parts of Great Britain, Northern Ireland, and Irish Free State.

Entries. 2. Every Lot must be intimated by a Certificate of Entry, lodged with the Secretary *not later than Monday*, 12*th April*, *for Implements and other Articles*, *and Thursday*, 6*th May*, *for Stock*, *Poultry*, *and Dairy Produce*, *&c.* No Entry taken at ordinary fees later than those which are received at the Society's Office by first post, or 10 o'clock, on Friday morning, 7th May. Late Entries for Cattle, Horses, Sheep, Goats, and Pigs taken on payment of 10s. additional for each entry (Poultry, Dairy Produce, Wool, Rural Industries, and Horse-shoeing at double fees) till 10 o'clock Wednesday morning (12th May), at the Society's Office, Edinburgh. Printed forms of Entry will be issued on application to the Secretary, No. 3 George IV. Bridge, Edinburgh. Admission Orders for Exhibits and Attendants will be forwarded to Exhibitors, by post, previous to the Show.

Between 6th May and 27th May an Exhibitor who has made, in due time, an entry of Horses, Cattle, Sheep, Goats or Pigs, in a particular class, will be permitted to substitute for it an entry of another animal in the *same class* on payment of a fee of Five Shillings per entry.

Licences for moving Stock. 3. This Premium List is published and the Show will be held subject to any Orders that may be issued by the Ministry of Agriculture or Local Authorities. Any licences that may be required for the movement of Stock into or away from the Show must be obtained by Exhibitors. For these licences application should be made to the Chief Constable, Kelso.

Diseased Animals. 4. Animals suffering from any form of infectious or contagious disease—including ringworm or other form of infectious or contagious skin ailment—must not be brought to the Show. Those infringing this Rule shall be liable to a fine of 40s., and to have their Stock removed.

Fees to accompany Entries. 5. No Entry can be received or recorded unless it is accompanied by the necessary fees, and complies fully with the Regulations in the Premium List, the Secretary being empowered to return entries sent without the necessary fees.

Particulars of Entries. 6. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor. The Society shall have power at any time to call upon an Exhibitor to furnish proof of the correctness of any statement in his entry.

Name of Breeder. 7. The name of the Breeder, if known, must be given, and if the Breeder is not known, a declaration to that effect, signed by the Exhibitor, must be made on the Entry Schedule, and no pedigree will be entered in the Catalogue when the Breeder is unknown.

No substitution of Animals. 8. All animals, except calves, foals, and lambs shown with their dams, must be entered in the classes applicable to them, and cannot be withdrawn after entry, or other animals be substituted in their place, except as provided in Rule 2 above.

One Class only. 9. For prizes given by the Society, no animal shall be allowed to compete in more than one class, or to compete in any class except that prescribed for animals of its pedigree and description; but this Rule does not apply to the Jumping and Harness Classes.

Ownership. 10. All stock exhibited at the Show, except where otherwise stated in the Premium List, must be, at the time of entry, the *bona fide* property of the Exhibitor in whose name it is entered.

Responsibility for Entries. 11. Exhibitors are alone responsible for the accuracy and eligibility of their entries. The recording of an entry or the admission of the exhibit to the Showyard will not relieve the Exhibitor of this responsibility. The entry-fee paid for an animal entered in a class for which it is not eligible is not returnable.

Society not liable. 12. The Society shall not be liable for any loss or damage which Stock, Poultry, Dairy Produce, &c., Implements, or other articles may sustain at the Show, or in transit.

Disqualified Exhibitors. 13. The Society reserve to themselves the right of refusing, cancelling, or prohibiting the exhibition of entries from any person who, after 1st January 1904, has been expelled from the membership of any Agricultural or Dairy Society, or who may have been prohibited, suspended, or disqualified from making entries or exhibiting at the Show or Shows of any Agricultural or Dairy Society or Breed Society in consequence of having attempted to obtain a Prize by giving a false Certificate, or by other unfair means, or who is under exclusion from any Breed Society for fraudulent practices.

Animal Disqualified. 14. When an animal has previously been disqualified by the decision of any Agricultural or Breed Society in the United Kingdom, such disqualification shall attach, if the Exhibitor, being aware of the disqualification, fail to state it, and the grounds thereof, in his entry, to enable the Directors to judge of its validity.

Tampering with Animals. 15. Any artificial contrivance or device of any description found on or proved to have been used on an animal, either for preventing the flow of milk or for any other improper purpose, will disqualify that animal from being awarded a Premium, and the Owner of said animal may be prohibited from again entering Stock for any of the Society's General Shows, for such a period as the Directors may see fit.

Blindfolding Horses. 16. Horses shall not be blindfolded while being shown in the Ring.

Rejecting Entries. 17. The Society further reserve to themselves the right of refusing any entries they may think fit to exclude, or to cancel any entry made, or to prohibit the exhibition of any entry.

Control of Exhibits. 18. Stock entered for competition, and actually in the Show, is subject to the control and under the orders of the Stewards, Secretary, and other Show officials of the Society, and such stock may not be withdrawn from competition without the consent of the Stewards or Secretary.

Improper Conduct. 19. Persons making insulting remarks to, or in any way unduly interfering with, the Judges, Stewards, or other officials while in the performance of their duties, and all Exhibitors or others in charge of stock while in the judging rings refusing to accept or display tickets, rosettes, &c., awarded by the Judges, and handed to them by the Stewards or other officials, or tearing up tickets, rosettes, &c., so awarded and handed to them, or indulging in any similar conduct, shall be considered guilty of misconduct, and shall be dealt with under these rules.

Subject to Orders. 20. All persons in charge of stock or other exhibits, and all persons admitted into the Showyard, shall be subject to the rules of the Society, and shall obey the orders of the Stewards, Secretary, and other officials of the Society. Exhibitors shall be answerable for the conduct of their servants or representatives.

Power of Officials. 21. The Stewards and other officials have power to enforce the regulations of the Society in their different departments.

Protests. 22. A protest having reference to exhibits at the Show may be lodged by any person having interest. Protests having reference to competitions which take place on the first day of the Show must be lodged in writing with the Secretary at his Office in the Showyard not later than 9 A.M. on Wednesday, the second day of the Show, and parties must be in attendance at the Secretary's Office in the Showyard at 9.30 A.M. that day, when protests may be disposed of. Protests relating to competitions taking place after the first day of the Show must be lodged before 5 P.M. on the day on which the particular exhibition takes place. Each protest must state specifically the grounds of objection, and must be accompanied by a deposit of £2, 2s., which deposit may, if the objection be proved frivolous to the satisfaction of the Directors, be forfeited. Protests may be lodged at any time by Directors, and in this case no deposit will be required. Protests will be heard and determined by the Directors. Protests on veterinary grounds not received.

Penalties for Offences. 23. The violation of any one of the regulations, or disobedience of the orders of the Directors, Stewards, Secretary, or other officials of the Society, shall render the offending person liable to the forfeiture of all premiums awarded to him, or of such a portion as the Directors may ordain, and also liable to be expelled from the membership of the Society, and disqualified from again, or for a certain number of years, exhibiting at the Shows of the Society, or to have his case disposed of by fine or otherwise as the Directors may determine.

Final Authority. 24. The decision of the Directors shall, in every matter arising at or in connection with the Show, be final; and every person present at the Show, whether as a Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have agreed to refer the subject-matter of such decision to the final determination of the Directors to the exclusion of all Courts of Law.

Intimating Decisions. 25. All decisions under these rules may, along with the names and addresses of the persons against whom such decisions have been pronounced, be communicated by the Secretary of this Society to the Secretaries of all Agricultural or Dairy Societies holding open Shows in the United Kingdom, and to the Secretaries of all Breed Societies in the United Kingdom, and may be published in the Annual Reports of this Society, and in such newspapers or journals as the Directors may determine; and every Exhibitor competing at the Show, and every person present at the Show, whether as a Director, Member of Committee, Steward, Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have consented to such communication and publication.

Former Winners. 26. An animal to which a first Premium has been awarded, even if it should not qualify for that Premium, or an animal which subsequently becomes entitled to a first Premium, at a General Show of the Society, cannot again compete in the same class, notwithstanding any alteration in the heights stated for such class, but may be exhibited as Extra Stock.

Herd-books. 27. Shorthorn, Aberdeen-Angus, Galloway, Belted Galloway, Highland, British Friesian, and Red Poll cattle must be entered in the herd-books—Ayrshire Cattle in the herd-book or any Appendices thereto—or the Exhibitor must produce evidence that his animal is eligible to be entered therein.

Height of Horses. 28. All Horses or Ponies entered in classes in which a particular height is stated shall, before being judged, be measured with their shoes on. No subsequent measuring or alteration of shoes will be permitted.

Weight of Shoes. 29. Exhibitors of Hackney and Harness Horses shall be required to adhere to the Rules and Regulations of the Hackney Horse Society with regard to the weight of shoes on their exhibits, the Society's Veterinary Inspector being instructed to examine all the Hackneys and Harness Horses on the opening morning of the Show, and see that the following Rules as to the weight of shoes are attended to—viz., (*a*) For Hackneys exceeding 14 hands (except Hackney yearling colts and Hackney yearling fillies), no shoe (nails included) may exceed 2 lb. in weight; (*b*) for Ponies not exceeding 14 hands, Hackney yearling colts and Hackney yearling fillies, no shoe (nails included) may exceed 1¼ lb. in weight.

Overfeeding. 30. Breeding Stock must not be shown in an improper state of fatness, and the Judges are requested not to award Premiums to overfed animals; and no Cattle or Sheep which after the age of twelve months have been exhibited as Fat Stock at any Show are eligible to compete in the Breeding Classes for the Society's Prizes.

Sires. 31. Aged Bulls and Stallions must have had produce, and, along with two-year-old Bulls, three-year-old Colts, and two-shear and aged Tups, have served within the twelve months immediately preceding the Show.

Calving Cows. 32. Except as may be otherwise specially provided in this Premium List, cows of all breeds (other than Ayrshire, British Friesian Red Poll, and Dexter) must have had a calf within nine months previous to the Show, and when exhibited must be in milk. Cows of the Ayrshire, British Friesian, Red Poll, and Dexter breeds must have had a calf within fifteen months previous to the Show. *Animals of any age that have had a calf must be shown as Cows.*

In-calf Heifers.

33. Two-year-old Heifers of the Shorthorn, Aberdeen-Angus, Galloway, Belted Galloway, British Friesian, Red Poll, and Dexter breeds, two-year-old Yeld Ayrshire Heifers, and three-year-old Highland Heifers, must be in calf when exhibited, and the Premiums will be withheld till birth be certified, which must be within nine months after the Show.

Mares.

34. A Mare entered in a class for "Mares with foal at foot" must have produced a foal after 1st January of the year of the Show, must have regularly nursed her own or another foal, and must have the foal with her in the Show. If the mare's own foal is alive it must be the foal shown with the mare. In the case of a Mare that has not foaled before the Show, or whose foal has died, she shall, if not in milk, be eligible without further entry to compete among the Yeld Mares if a corresponding class for Yeld Mares be included in the Premium List. Draught Yeld Mares must produce a foal within twelve months from the first day of the Show. A Mare in a class for "Mares or Geldings" may or may not have had a foal in the year of the Show, but shall not have her foal exhibited with her, nor be in milk at the time of the Show.

Sows.

35. All Sows born in or before 1924 must have produced a litter of pigs in the year of the Show before the opening day. Sows born between 1st January and 1st September 1925 must either have produced a litter of pigs before the Show, or produce a litter within three months of the last day of the Show. Certificates of the date of farrowing must be supplied in every case.

Calves and Foals.

Calving, Farrowing, and Foaling Certificates.

36. With reference to Regulation 33, birth of a live or full-time calf must be certified; and in regard to Regulation 34, birth of at least a nine months' foal; or in the case of the death of the dam, a Veterinary Surgeon's certificate must be produced certifying that at the time of death the animal was so far advanced with calf or foal that if it had lived it would have produced a calf or foal within the periods stated in Rules 33 and 34. Certificates required by the foregoing Regulations will be issued after the Show, and must reach the office of the Secretary as follows: calving certificates within ten months, farrowing certificates within four months, and foaling certificates within thirteen months, of the last day of the Show. In default of this, the animal will be regarded as having failed to fulfil the Regulations, and the prize will therefore pass to the animal next in order of merit or be forfeited.

Special Prizes.

37. Except when otherwise provided, the awards of Special Prizes shall not be subject to the Regulations as to calving and foaling.

Payment of Prizes.

38. The Premiums awarded, except those withheld till birth of calf or foal or litter of pigs is certified, will be paid as soon after the Show as practicable, and, with the exception of the Tweeddale Gold Medal, Special Cups, and Medals, may be taken either in money or in plate.

Veterinary Examination of Stallions and Colts.

39. No Stallion or entire Colt, two years old or upwards, shall be allowed to compete for any of the Society's Prizes unless it has previously been licensed for stud purposes during the current year by the Board of Agriculture for Scotland, the Ministry of Agriculture and Fisheries, or the Irish Department of Agriculture.

Soundness of other Horses.

Accommodation for examination

40. Judges are particularly requested to satisfy themselves, as far a possible, regarding the soundness of all Horses before awarding the Prizes, and to avoid giving Prizes to animals showing symptoms of hereditary disease. The Judges may consult the Society's Veterinary Surgeon if they deem it expedient. Private accommodation is provided for the examination of horses by the Veterinary Surgeon. No protests on veterinary grounds will be received.

Ewes. 41. Every Ewe must have given birth to and reared a lamb in the year of the Show; and Ewes of the Blackface and Cheviot breeds must be in milk, and have their lambs at foot.

Milking. 42. Animals in milk of the Dairy breeds must be milked dry at 6 o'clock on the evening previous to the opening of the Show in the presence of, and to the satisfaction of, the Steward of Cattle or a representative of the Society duly authorised by him. Animals arriving after six o'clock will be milked dry at the time of arrival.

Clipping. 43. Sheep must have been clipt bare after the first day of the November preceding the Show, no part of the animal to be clipt prior to that date—this Rule not to apply to Cheviot Sheep.

No Blackface Sheep shall be eligible which has not been clipt bare on or after the 1st April of the year of the Show.

Colouring, &c., of Sheep and Pigs. 44. The Steward of Sheep, who can call in assistance if so desired by him, shall have full power to disqualify any pen of Blackface, Cheviot, Border Leicester, and Half-bred Sheep which he considers unnaturally coloured, or when the fleece, face, or legs have been dealt with by the use of foreign substances.

The use of artificial whitening or powder on Large White and Middle White Pigs is prohibited, and the Judge is empowered to disqualify any pig so whitened or powdered.

Flock Books. 45. All Oxford Down and Suffolk Sheep shown must be entered or eligible for entry in the Oxford Down and Suffolk Flock Books respectively.

Poultry. 46. In Poultry the Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Railway Passes. 47. Railway Certificates for Stock are issued to Exhibitors before the Show along with their Tickets of Admission, one Certificate for the outward and another for the return journey being sufficient for each Exhibitor for any number of exhibits (see page 92).

Admission of Stock. 48. Poultry and Stock will be admitted on Monday, the day before the opening of the Show, and, with the exception of Horses, must be in the Yard before 12 o'clock that night. Horses must be in before 8 o'clock on the morning of Tuesday, except those entered in classes for which other times for arrival are elsewhere stated in this List. Judging begins at 9.30 A.M. on Tuesday. Exhibited on Tuesday, Wednesday, Thursday, and Friday. Stock may be admitted on the Saturday preceding the Show, but only by sending two days' prior notice to the Secretary's Office in the Showyard.

Parades. 49. Horses and Cattle must be paraded at the times stated in the Programme of the Show, and when required by the Stewards, and under their direction. Females of the Highland Cattle breed will, on this occasion, be paraded at the option of the exhibitor. In Parade, Horses must be ridden or led as provided in their respective classes. Prize and commended Cattle and Horses will receive two rosettes each, which must be attached to the head of the animal, one on each side. Attendants must be beside their animals *twenty minutes before the hour of Parade*, and be ready to proceed to the ring immediately on receiving the order of the Stewards. Infringement of this Rule, or failure of any attendant to obey the orders of the Society's officials, will render the Exhibitor liable to a fine of 20s. for each separate infringement or act of disobedience, and to the forfeiture of any or all of the Prizes awarded to him at this Show.

Responsibility of Exhibitors. 50. Exhibitors shall be answerable for all acts, whether committed by themselves, their servants, or others in charge of their Stock, and shall be responsible for the condition of their animals during the whole time they remain in the Showyard.

Moving from stalls. 51. No animal shall be taken out of its stall after 10 A.M. during the Show except by order of the Stewards, or with permission of the Secretary.

Washing Cattle. 52. Cattle shall not be taken out of their stalls to be washed after the Judging has commenced. Cattle must not be washed beside the Judging Rings. Those infringing this Rule shall be liable to a fine of 10s.

53. Soap or other adhesive material must not be used in dressing cattle or horses. Infringement of this Rule will render the animal upon which the material is used liable to be disqualified. *Soaping prohibited.*

54. Loose-boxes will be provided for all horses; covered accommodation for other live stock. Stalls for nurse cows charged at ordinary rates. Boxes (floored) for attendants on Cattle, Horses, Sheep, Goats, and Pigs will be provided at a charge of 40s. for each box for members; 50s. for non-members. (See Rule 79.) *Loose-boxes and Stalls.*

55. Exhibitors requiring the boxes, stalls, or pens for their animals to be floored must give instructions, stating the Catalogue No., to the Society's Showyard Erector, Mr John Reid, Showyard, ten days before the Show opens. (For charges, see Rule 78.) *Floored Boxes and Stalls for Animals.*

56. Bulls must be secured by nose-rings, with chains or ropes attached, or with strong halters and double ropes. All Cattle, other than Highland Cattle, must be tied in their stalls. *Securing Cattle.*

57. During the time the Show is open to the public no rug shall be hung up so as to conceal any animal in a horse-box or stall, except with the special permission of the Steward of that department. *Concealing Animals.*

58. Five days' supply of straw, hay, grass, and tares will be provided free by the Society. Any additional fodder or other kinds of food required will be supplied at fixed prices in the Forage-yard. The Forage-yard will close at 1.30 P.M. on Friday, the last supply to be given to attendants then; and if any extra supply is required on account of stock remaining in the Yard after the close of the Show, notice must be given to the Forage Steward not later than 5 o'clock on Thursday. Any servant removing bedding from an adjoining stall will be fined in double the amount taken. Exhibitors may fetch their own cake or corn to the Yard, but not *grass, tares, hay, or straw.* Coops, food, and attendance for Poultry and Rabbits will be provided by the Society. *Fodder.*

59. Servants in charge of Stock must bring their own buckets or pails and a piece of rope or sheep-net to carry their forage. Mangers, and sheep and pig troughs, will be provided. *Feeding appliances.*

60. Sawdust must not be used as bedding for Stock. *Sawdust.*

61. As the command of water in the Yard is limited, it is particularly requested that waste be avoided. *Water.*

62. No lights allowed in the Yard at night, and Smoking is strictly prohibited within the Sheds. Those infringing this Rule shall be liable to a fine of 10s. The gates will be closed at midnight, and no person shall be allowed to enter or leave the Yard between that time and 5 A.M. without a special permit. *Lights and Smoking. Closing of Gates.*

63. Stock or Poultry cannot be removed from the Yard till 5 P.M. on Friday, the last day of the Show, except on certificate by the Veterinary Surgeon employed by the Directors, countersigned by the Steward of the department or the Secretary. *Removal of Stock.*

64. At the close of the Show on Tuesday, Wednesday, and Thursday, horses may be withdrawn for the night on a deposit of £5 for each animal, which shall be forfeited, along with any prize money it may have gained, if the animal is not brought back. They must return between 7 and 7.30 the following morning, and those not in before 8 shall forfeit 10s. Horse passes to be applied for at the Secretary's Office between 5 and 6 P.M. on Tuesday, and the deposit, unless forfeited in whole or in part, will be returned between 12.30 and 2.30 on Friday. *Withdrawal of horses overnight.*

65. When the Stock is leaving the Yard, no animal is to be moved till ordered by those in charge of clearing the Yard. Those transgressing this Rule shall be liable to a fine of 10s., and to be detained till all the other Stock is removed. *Order in removal.*

66. Poultry may be penned before the opening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor an authorised representative *Penning and removing Poultry.*

of the Exhibitor being present to pen or remove Poultry, the birds will be penned and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to Exhibits by errors or accidents in penning, despatching, or conveying Exhibits.

Closing of Poultry Shed to Public. 67. On the opening day of the Show the Poultry Shed will be closed to the public during the Judging. On the last day of the Show the Poultry Shed will be closed to the public at 4 P.M.; at 5 P.M. Exhibitors or their representatives will be admitted to the Shed to remove Exhibits, provided the Exhibitor has, *not later than* 11 A.M. *on the last day of the Show*, given written notice to the Secretary to the effect that the Exhibitor or the Exhibitor's representative will attend at the Poultry Shed at 5 P.M. to remove the birds.

JUDGING STOCK AND POULTRY.

Opening Gates. 68. On Tuesday, the first day of the Show, no person will be admitted, except Servants in charge of Stock, till 8 A.M., when the Gates are opened to the public.

Judging. 69. The Judges will commence their inspection at 9.30 A.M. The spaces reserved for the Judging will be enclosed, and no encroachment shall be permitted.

Insufficient merit. 70. In no case shall a Premium be awarded unless the Judges deem the animals to have sufficient merit; and where only one or two lots are presented in a class, and the Judges consider them unworthy of the Premiums offered, it shall be in their power to award a lower prize.

Commendations. 71. In addition to the Premiums, the Judges may award **one** Very Highly Commended, **one** Highly Commended, and as many Commended tickets in each class as they consider justified by the number and merit of the entries.

Ayrshire, British Friesian, and Red Poll Cows and Heifers. 72. Ayrshire, British Friesian, and Red Poll Cows which have not calved before the Show, whether entered in a class for Cows in Milk or for Cows in Calf, shall be judged along with the Cows in Calf, and Ayrshire, British Friesian, and Red Poll Cows or Heifers which have calved before the Show—in whichever of the classes entered—shall be judged along with Cows in Milk.

Attending Members' duties. 73. Attending Members will accompany each section of the Judges. It will be the duty of Attending Members to bring the animals out to the Judges and to see that no obstruction is offered to them, and that the space reserved for them is not encroached upon; to ticket the prize animals; to send the Nos. of the prize animals to the Award Lectern near the Secretary's Office; to assist the Judges in completing their return of awards; and should any difficulty arise, to communicate with the Stewards or Secretary.

74. It shall not be competent for any Exhibitor, nor for his Factor or Land-Steward, to act as a Judge or attending Member in any class in which he is competing.

DAIRY PRODUCE.

75. Dairy Produce will be received in the Showyard on Monday, the day before the opening of the Show, and till 8 A.M. on Tuesday, the first day of the Show. Judged at 9.30 A.M. on Tuesday. Exhibited Tuesday, Wednesday, Thursday, and Friday.

Placing and removing Dairy Produce. 76. Dairy Produce must have been made on the Exhibitor's farm in the year of the Show. No Exhibitor shall show more than **one** lot in each class. Exhibits of Dairy Produce may be placed before the opening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor a person with written authority from the Exhibitor being present to place or remove exhibits, they will be placed and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. In the case of exhibits which are not removed by 5.30 P.M. on the closing day of the Show, the Society will hold itself at liberty to hand them over to the railway companies for despatch to the respective Exhibitors.

STALL RENT (INCLUDING ENTRY FEE).

Stall Rent.

77. The Stall Rents (which include Entry Fees) as stated opposite the individual Classes in this List, shall be paid by Exhibitors when making their Entries. The Secretary is instructed to return entries sent without the necessary fees.

FLOORED BOXES AND STALLS.

Floored Stalls for Animals.

78. Exhibitors desiring the boxes, stalls, or pens for their animals to be floored can have this done by giving instructions, stating the Catalogue No., ten days before the opening of the Show, to the Society's Showyard Erector (Mr John Reid, Showyard), to whom the following charges for flooring have to be paid: Horses, 30s. each; Ponies, Cattle, Sheep, and Pigs, 20s. each.

ACCOMMODATION FOR ATTENDANTS.

Accommodation for Attendants.

79. Boxes for accommodation of attendants on Stock will, if desired, be provided beside the Stock at a charge of 40s. per box for members and 50s. for non-members. Attendants' boxes will be floored and lined with wood, with door. Applications for attendants' boxes must accompany entries of Stock, and Exhibitors must state the animal next to which the attendants' box is to be placed. **Attendants' boxes cannot be guaranteed after the closing date.**

IMPLEMENTS AND OTHER ARTICLES.

Admission of Goods.

80. Implements will be received in the Yard from Tuesday, 22nd June, till 5 o'clock on the afternoon of Monday, 28th June. Exhibited Tuesday, Wednesday, Thursday, and Friday. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor, and prices must be stated.

Premiums.

81. No Money Prizes or Medals, except when specially offered, will be given by the Society for Implements of any kind.

Refusing Entries.

82. Agricultural Implements, and Implements and collections of articles not Agricultural, will be received for Exhibition, but the Secretary is entitled to refuse Entries from dealers in articles not deemed worthy of Exhibition.

Local Operatives.

83. In order to encourage exhibits of Agricultural Implements from operative Blacksmiths and Carpenters in the district of the Show, open space will be provided for these in some less prominent part of the Yard at a charge of 15s. for space 10 feet wide and 20 feet deep.

Articles not entered.

84. Every article to be exhibited must be entered on the Society's Entry Form. Any article not so entered that is taken to the Show is liable to be ordered out of, or removed from, the Showyard, or confiscated to the Society. Exhibitors infringing this rule are moreover liable to a fine of £1.

Selling by auction and noisy behaviour forbidden.

85. "Cheap-Jacks" are not admitted to the Showyard. The selling of goods by auction, shouting, and other behaviour calculated to annoy visitors or Exhibitors, are strictly forbidden. Exhibitors infringing this Regulation are liable to a fine of £1, and to have themselves and their goods ordered out of, or removed from, the Showyard, or to have their goods confiscated to the Society.

Placing Exhibits.
Removing Exhibits.

86. The articles of each Exhibitor must all be placed in one stand, except Implements in motion, and must not on any account extend beyond the allotted space. No article shall be moved out of its stand, or the stand dismantled, till the termination of the Show, at 5 P.M. on Friday. Those infringing this Rule shall be liable to a fine of 10s.

Restoring Turf.

87. When the ground requires to be broken, the turf must be carefully lifted and laid aside, and the surface must be restored to the satisfaction of the Society, and at the expense of the Exhibitor. Failing this being done, the Society shall be at liberty to restore the ground and charge the cost to the Exhibitor.

Arranging Exhibits.
Signs.

88. Exhibitors must arrange their own articles *within* the space allotted to them before 9 o'clock on Tuesday, and to the satisfaction of the Stewards in charge of the Implement Yard. Exhibitors are prohibited from sub-letting space allotted to them, and from displaying the name of any other firm on their Stand. All signs, except signs on gables, must face the front only. Nails must not be driven into the canvas.

Handbills.

89. Exhibitors are not allowed to distribute handbills anywhere in the Yard except at their own Stand; and they must not for this or any other purpose encroach upon the adjacent alleys or open spaces.

Sweeping Stands, &c.

90. Exhibitors are required to have their Stands and the portions of the alleys immediately adjoining them swept up before eight o'clock on each morning of the Show.

Fuel.

91. All Machines requiring steam or fire must be entered as such in the Certificate, and will be placed in the Motion Yard. *Coke only shall be used in all cases where fire is required.* Coal shall not be used at any time in the Showyard. Those infringing this Rule shall incur a penalty of £5.

Steam Engines.

92. No Steam Engine shall be driven in the Yard at a greater speed than 4 miles an hour. Traction Engines shall not be used in conveying Exhibits or other goods from one place to another in the Showyard.

Traction Engines.

93. Locomotive and Traction Engines and other Machines must not be moved from their places without permission of the Secretary or Stewards, and must not leave their stands till 6 P.M. on Friday.

Consigning Implements.

94. There must be attached to each Implement, when forwarded to the Show, a label bearing the Exhibitor's name, and that of the Implement, as well as the number of the Exhibitor's stand.

95. The carriage of all Implements must be prepaid.

Photographing in Showyard.

96. Photographing in the Showyard is not permitted, except by photographers having a Stand in the Showyard or holding a "Photographer's Ticket." The "Photographer's Ticket" may be had from the Secretary, price 20s. It admits the holder to the Show when open to the public, and entitles him to photograph in the Showyard, subject to arrangements made by the Stewards. It does not entitle the holder to sell photographs in the Showyard. No photographer shall be allowed in the ring during Parades, except with the sanction of the Steward of Parades.

Offices.

97. Covered Booths for Offices (9 feet by 9 feet), purely for business, not for exhibition of goods, can be had for £5 to Members and £7 to Non-Members.

Exhibitors' and Attendants' Tickets.

98. Each Exhibitor in the Implement Department who is not a Member of the Society will receive one free Ticket of Admission to the Showyard for himself or a member of his firm, and will receive, in addition, for the use of attendants employed by him at his Stand, two Tickets of Admission for each complete ten feet of shedding in the

Motion Yard, and one Ticket for each complete ten feet of shedding in the other sections. No additional Free Tickets can be issued in any circumstances whatever. Additional Attendants' Tickets, not more than five for one Exhibitor, may be obtained by application in writing by the Exhibitor at 5s. each. *No tickets will be issued without an Order.*

Tickets to be filled up and signed.

99. The Tickets of Admission for Exhibitors and Attendants referred to in the foregoing Regulation will (about fourteen days prior to the Show) be issued to the Exhibitors in blank, with the number of the Exhibitor's Stand. The name of the person for whom each ticket is intended must be written on it before it is used. Each person holding a Free Ticket of Admission must sign his or her name on the back thereof, and must also, when required, sign his or her name in the book at the Entrance Gate. Exhibitors' attendants are strictly cautioned not to lend or transfer their Tickets, which can be used only by the persons whose names they bear, and who must be *bona fide* acting for, or employed by, the Exhibitor. No Ticket is transferable. An Exhibitor is liable to a fine of £1 for each case of transfer or other improper use of a Ticket issued to himself or employee.

Tickets not Transferable.

Improper use of Tickets.

Admission of Supplies for Stand-holders.

100. The following are the arrangements for the admission of Supplies (Refreshments or other goods) for Stand-holders during the Show: Messenger on foot (with or without hand-barrow) with supplies, admitted by Special Ticket; price for one admission, 2s., for the four days, 6s. Motor or horse vehicle and driver, with supplies, admitted by Special Ticket; price for one admission, 2s., for the four days, 10s. These Special Tickets may be had from the Secretary. Vehicles, with supplies, admitted throughout the day on the first day of the Show; on the other three days they will not be admitted between the hours of 10 A.M. and 5 P.M. except by written permit from the Secretary.

Cycles.

101. The riding of Cycles in the Showyard is prohibited.

Accidents.

102. The Society will not be responsible for any accident that may occur from the machinery belonging to any Exhibitor; and it is a condition of entry that each Exhibitor shall hold the Society harmless, and indemnify it against any legal proceedings arising from any accident caused by his machinery.

Alcoholic Drinks.

103. The giving of Alcoholic Drinks to visitors at Stands in the Show is strictly prohibited.

Gas.

104. Exhibitors desiring the use of gas in the Showyard should apply to the Manager of the Gas Works, Kelso, not later than Saturday, 22nd May.

Space for Stands.

105. * Ground to be taken in spaces of 10 feet frontage by 20 feet deep, and in Motion Yard in spaces of 10 feet frontage by 50 feet deep. Exhibitors must take their space in one or other of the following Sections. Space is not let partly covered and partly open. Exhibits not in motion may be excluded from the Motion Yard. The space in the Motion Yard being limited in extent, and intended mainly for exhibits in motion, not more than one-fifth of the space allotted to any one Exhibitor—and in no case more than 600 square feet—may be occupied in the Motion Yard by exhibits not in motion.

Exhibits not in Motion.

Maximum Space.

106. The maximum extent of space which any one Exhibitor may apply for shall be 60 feet of frontage in the Motion Yard, and 120 feet of frontage in the other Sections.

Allocation of space.

107. The Society reserves the right to allot to applicants for Stands either the whole or part of the space they ask for.

108. Exhibitors requiring work executed in connection with the fitting up of stands allotted to them must employ the Society's Showyard Erector—Mr John Reid, 55 Blenheim Place, Aberdeen. The execution of orders received later than one week before the opening of the Show cannot be guaranteed.

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* Special provision may be made for Exhibitors of both machinery in motion and implements and machinery not in motion on application being made to the Secretary.

109. Rates for space, payable by Exhibitors when making their Entries:—

	Members.	Non-Members.
1. Open ground without Shedding, 20 ft. deep, per 10 ft.	£1 10 0	£2 5 0
2. Special open ground, without Shedding, 20 ft. deep, per 10 ft.	2 10 0	3 5 0
3. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft.	1 10 0	2 5 0
4. Special Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft.	2 10 0	3 5 0
5. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, *close boarded at back*, per 10 ft.	3 0 0	4 0 0
6. Special Shedding, 20 ft. deep, 7 ft. to eave, *close boarded at back*, per 10 ft.	4 10 0	5 10 0
7. *Motion Yard, without Shedding, 50 ft. deep, per 10 ft.	3 0 0	4 15 0
8. *Motion Yard, with Shedding (10 ft. open behind, 20 ft. covered, and 20 ft. *open in front*), 11 ft. to eave, per 10 ft.	4 10 0	6 0 0
9. Covered Booths for offices, 9 ft. by 9 ft., each .	5 0 0	7 0 0
10. Press offices, 9 ft. by 9 ft., each £4.		

* See Rules 105 and 106.

All internal fittings to be executed by the Exhibitor at his own expense. The Society's Showyard Erector must be employed. See Rule 108.

NEW IMPLEMENTS.

1. An Exhibitor who desires to enter a "New Implement" for competition for the Society's Silver Medal must enter it separately as a "New Implement" at the commencement of the specification of his proposed exhibits; and he must define clearly, on a special form obtainable from the Secretary, the exact nature of the novelty which qualifies such implement to be entered for a Medal. Unless the "New Implement" be properly described in the specification, and particulars of its novelty are given at the time of making the entry, it will not be accepted.

2. For each entry of a "New Implement," sent with an application for space, made in accordance with Regulation 109, a non-returnable Entry Fee of £1 will be charged. Late entries of "New Implements" *only* will, however, be considered up to 17th May, provided that no increase of space beyond that originally allotted to the Exhibitor will be occasioned by such New Implements being shown at his stand.

3. In cases of sufficient merit, the Judges will recommend the award of the Society's Silver Medal to New Implements for agricultural or estate purposes, or to new improvements in such implements. No award shall be made without such trial as may be approved by the Directors.

4. The Society does not bind itself to try in the field every "New Implement" entered for a Silver Medal. Any Exhibitor who expresses a wish to do so can, with the sanction of the Steward of Implements, at his own expense take his New Implement out of the Showyard during the Show week and put it to work, and if within a reasonable distance, the Judges will, if they deem it necessary, inspect it at work and decide if it is worthy of a Silver Medal.

5. No Silver Medals will be awarded to, nor can any entry as New Implements be accepted of, machines of any class for which competitive trials have been announced by the Society as about to take place.

6. The Judges of New Implements will commence their inspection at 2.30 P.M. on Monday, 28th June, and will take in rotation the stands of the exhibitors who have entered New Implements for the Society's Silver Medals. A notice will be posted at the Secretary's Office each evening giving the number of the stand at which the Judges will commence their inspection next morning. Each Exhibitor, or his representative, will be expected to be at the stand to explain the working of the Implement to the Judges. If the exhibit be not ready and in working order by the time the Judges make their inspection, it is liable to be struck off the list.

7. All publications by exhibitors of the award of the Society's Silver Medals must state the year of the award, and must specify the exact nature of the "New Implement," of the improvement, or of the attachment to an Implement, for which the Silver Medal has been awarded.

8. On the recommendation of the Judges, with the approval of the Directors, any New Implement of merit, which cannot be sufficiently tried, or which is capable of further development, may be entered and exhibited as a "New Implement" at the succeeding Show of the Society.

9. The Judges' decision, when duly accepted and recorded, will in all cases be final.

RESERVED SEATS (NUMBERED) IN GRAND STAND.

For Charges and Tickets, apply to Secretary up to opening day of Show. Thereafter tickets are sold only at the Booking-Office in Showyard behind Grand Stand.

ADMISSION OF THE PUBLIC.

The public will be admitted daily at 8 A.M. Judging begins on Tuesday at 9.30 A.M. The charges for admission to the Yard will be—**Tuesday,** from 8 A.M. till 5 P.M., 7s. 6d. **Wednesday,** from 8 A.M. till 5 P.M., 5s. **Thursday,** from 8 A.M. till 5 P.M., 2s. 6d.; from 5 P.M. till 8 P.M., 1s. **Friday,** from 8 A.M. till 5 P.M., 1s.

On **Thursday** and **Friday** children under twelve years of age admitted at 6d.

No Pass-out Checks given, and no re-admission without payment.

Season Tickets—12s. 6d. each on application to Secretary. On the days of the Show, Season Tickets are sold only at the Entrance Gates.

ADMISSION OF MEMBERS AND EXHIBITORS.

On exhibiting their "*Member's Badge,*" which is strictly not transferable, Members of the Society are admitted free to the Showyard. Badges will be sent to all Members residing in Great Britain, Northern Ireland, and Irish Free State, whose addresses are known, and on no account will duplicates be issued. **All Members not producing their badges must pay at the gates, and the admission money will not on any account be returned.** Badges must be signed by Members before being presented at the gate, and Members should continue to wear the badge during the whole time that they are in the Showyard.

Tickets of admission to the Showyard are sent to Exhibitors of Stock, Poultry, Dairy Produce, &c. (not Members), whose Entry Fees amount to not less than 12s. 6d.

For Exhibitors of Implements and their assistants tickets are issued as provided in the Regulations for Implements.

VARIOUS.

Exhibitors may display their own Placards *inside and in front of* their stands; with this exception, no Bills of any kind other than those of the Society are permitted on any of the Show erections. No newspapers or any other articles to be carried about the Yard for sale or display.

No Carriages or Equestrians admitted without special leave from the Directors, and then only for Invalids. Bath-chairs may be brought in.

Premium Lists, Regulations, and Certificates of Entry may be obtained by applying at the Secretary's Office, No. 3 George IV. Bridge, Edinburgh.

All Communications should be addressed to The Secretary of the Highland and Agricultural Society of Scotland, No. 3 George IV. Bridge, Edinburgh. From 23rd June to 1st July, to the Secretary's Office, Showyard, Kelso.

Address for Telegrams—"SOCIETY," EDINBURGH.
Telephone No.—CENTRAL 3655.

RAILWAY ARRANGEMENTS.

The Railway Companies will be furnished with a list of the Exhibitors of Stock and Implements, after the 8th June. All applications for horse-boxes and trucks, and for information as to train arrangements, must be made by the Exhibitors themselves to the Stationmaster where their stock is to be trucked.

The arrangements made by the Railway Companies for the conveyance of Live Stock and Goods to and from the Show are **indicated** *below, but exhibitors are recommended to apply to the respective companies for* **full particulars**:—

1. Live Stock and Goods *to* the Show to be charged ordinary rates.

2. Live Stock and Goods *from* the Show, if sold, to be charged ordinary rates.

3. Live Stock from the Show, if unsold, and returned not later than the second day after the closing day of the Show (excluding Sunday), to be carried at half rates back to the Station whence the animals were sent, at owner's risk, on surrender of a Certificate from the Exhibitor, provided, in accordance with the Railway Companies' requirements, and signed by the Secretary, to the effect that they are really unsold; failing surrender of such certificate, ordinary rates will be charged. The reduction to half rates is to be allowed only when the Stock are returned by the same route as that by which they were conveyed to the Show, but it shall be in the option of the Railway Company or Companies to return the Stock at half rates by a different route.

4. Live Poultry from the Show, *if unsold,* to be carried by Passenger Train at half rates back to the Station from which sent, at O.R., on surrender of an agreed certificate signed by the Secretary of the Show to the effect that the Poultry are unsold and remain the property of the exhibitor. No certificate will be required for such traffic which is intended by the owner to be returned from the Show to the original sending Station by the same route as originally forwarded and the charges prepaid for both the outward and return journeys.

Poultry are only charged at the half rate when returned not later than the second day after the closing of the Show (Sunday being treated as a *dies non*).

5. Horse-boxes, or other Passenger Train vehicle, will not be provided for the carriage of Live Stock sent by Goods Train and invoiced at Goods Train rates. *For rates for Horse-boxes by Passenger and Special Trains, apply to the Railway Companies.*

6. Provender conveyed to and from Agricultural Shows with Live Stock will be charged at the applicable rates, subject to a free weight allowance, viz.—

Cattle	per animal,	56 lb.
Horses	,,	56 ,,
Sheep, goats, lambs, pigs, and calves .	,,	28 ,,

7. The carriage of all Live Stock, Implements, and other articles going to the Show for exhibition must be PREPAID; and the carriage on all traffic *returned from the Show by Passenger Train Service must be PREPAID.*

The carriage charges on Live Stock conveyed in special vehicles by Passenger Train and intended to be returned to the original sending Station may also be prepaid for the return journey at the original sending Station if the owner so desires.

The Railway Charge on all exhibits which are conveyed by Passenger Train in the Guard's Van and intended to be returned from the Show direct to the original sending Station by the same route must be PREPAID, for both the outward and return journeys, at the original sending Station. The agreed form of address label for Poultry, Rabbits, Dairy Produce, Bee Appliances, and Wool exhibits, which will be supplied through the Secretary of the Society, must be used in such cases.

8. Attendants in charge of Live Stock are conveyed free in the cases shown below, when certified by the owners to be *bona fide* in charge of such Live Stock:—

In Horse-Boxes.—Horses and Cattle: One man for each consignment, except where the consignment requires more than one vehicle, when one man to each vehicle may be sent free; but where two or three Horses or Cattle forming one consignment are sent in the same Horse-box and a man is required to travel with each animal, a man for each animal may be conveyed free, provided each animal is charged for separately.

In Horse-Boxes.—Small animals: One man to each vehicle.

In specially constructed Cattle Trucks.—Cattle or other animals: One man to each vehicle.

9. Agricultural Machines, Implements, and other Exhibits from the Show, *if unsold*, to be conveyed at half rates back to the Station whence they were sent, at Owner's risk, on production of a Certificate from the Exhibitor to the effect that they are unsold; failing production of such Certificate, ordinary rates must be charged. The reduction to half rates is to be allowed only when the articles are returned by the same route as that by which they were conveyed to the Show, but it shall be in the option of the Railway Company or Companies to return the articles at half rates by a different route.

10. Unsold goods, previously carried by railway, transferred from one Agricultural Show to another, in another part of the country, or exhibited at several Shows consecutively, and returned to the Station from whence originally sent, will be conveyed at half rates at Owner's risk, on production of Certificate from the Exhibitor, provided and signed by the Show Secretary, to the effect that they are unsold; failing production of such Certificate, ordinary rates will be charged. This applies only to Goods Trains.

11. The ordinary rates charged for carriage do not in any case include delivery *to*, or collection *from*, the Showground.

12. Agricultural Societies' Show Plant must be charged at Class C rates, station to station.

13. Tents, Canvas, and other articles, not for exhibition, to be charged the ordinary rates both going and returning.

14. Carriages and other Road Vehicles are only conveyed by Passenger Train when this can be conveniently done.

DELIVERY AND COLLECTION CHARGES.

Cartage Charges to be paid by the Exhibitor for the Delivery or Collection of traffic between the Railway Station at Kelso and the Showground of the Highland and Agricultural Society's Show at Kelso, on 29th, 30th June, 1st and 2nd July 1926.

	At C. & D. Rates.	At S. to S. Rates.
General traffic	3s. 6d. per ton.	5s. 6d. per ton.
Minimum charge per consignment .	2s.	3s.
Implements and Machinery (Agricultural), not exceeding 1 ton each .	3s. 6d. per ton.	5s. 6d. per ton.
Minimum charge per delivery . .	2s.	3s.
Implements and Machinery (Agricultural) on their own wheels (specially hauled), not exceeding 1 ton	5s. 9d. each.	8s. each.
When hauled on their own wheels behind a lorry, loaded or partly loaded with goods, actual weight at	3s. 6d. per ton.	5s. 6d. per ton.
Single articles, exceeding 1 ton but not exceeding 3 tons . . .	5s. 9d. per ton.	8s. per ton.
Single articles, exceeding 3 tons but not exceeding 5 tons . . .	7s. 3d. per ton.	9s. 6d. per ton.
Single articles, exceeding 5 tons, by special arrangement only, but no less charge than	9s. 6d. per ton.	11s. 9d. per ton.
Rustic Houses, by special arrangement only, but no less charge than . . .	14s. per load.	
Carriages, on their own wheels . . .	6s. each.	
Cattle, in floats	6s. per head.	
Minimum charge for each float . .	8s. 6d.	
Sheep, Goats, and Pigs, in floats . .	1s. 6d. per head.	
Minimum charge for each float . .	8s. 6d.	
Pigs, in crates	3s. 3d. per crate.	
Minimum charge per load . . .	6s. 6d.	
Ordinary Parcels by passenger train . .	6d. each.	

Miscellaneous passenger train traffic, including packages of plants and flowers carried at O.R. rates S. to S.	9d. per cwt.
Minimum charge per consignment	1s. 6d.
*Poultry in crates or hampers	9d. per crate or hamper.
*Rabbits in crates, hampers, &c.	

* **Poultry and Rabbit exhibits only** will be conveyed at the Society's expense from the Railway Station to the Showyard and back, but no exhibit subject to railway charges will be received by the Society. All other delivery charges must be paid by the Exhibitor.

REGULATIONS FOR GOAT CLASSES.

The animals will be milked dry at 6 o'clock on the evening previous to the opening of the Show, in the presence of, and to the satisfaction of, the Steward or a representative of the Society duly authorised by him.

All exhibits must be registered either in the Herd-Book, Foundation Book, Show Register, or Kid Register of the British Goat Society, in the name of the exhibitor (the registered number being quoted on the entry form), or if previously entered or owned by someone other than the exhibitor, a transfer of ownership must be registered with the British Goat Society.

REGULATIONS FOR RABBIT CLASSES.

Rabbits must be brought to the Showyard between 5 P.M. and 9 P.M. on Tuesday, the first day of the Show. No lot will be admitted without an Admission Order. Pens, food, and attendance will be found by the Society.

Rabbits may be penned on Tuesday evening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor an authorised representative of the Exhibitor being present to pen or remove Rabbits, they will be penned and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to Exhibits by errors or accidents in penning, despatching, or conveying Exhibits.

On the Wednesday, the second day of the Show, the Rabbit Shed will be closed to the public during the Judging. On the last day of the Show the Rabbit Shed will be closed to the public at 4 P.M.; at 5 P.M. Exhibitors or their representatives will be admitted to the Shed to remove Exhibits, provided the Exhibitor has, *not later than* 11 A.M. *on the last day of the Show*, given written notice to the Secretary to the effect that the Exhibitor or the Exhibitor's representative will attend at the Rabbit Shed at 5 P.M. to remove the Rabbits.

THE PRESIDENT'S CHAMPION MEDALS

A Champion Medal is given by His Grace THE DUKE OF ROXBURGHE, K.T., M.V.O., President of the Society, for the *best Animal* in each of the *following sections* :—

1. Shorthorn.
2. Aberdeen-Angus.
3. Galloway.
4. Belted Galloway.
5. Highland.
6. Ayrshire.
7. British-Friesian.
8. Red Poll.
9. Dexter.
10. Clydesdale Stallion.
11. Draught Gelding.
12. Clydesdale Mare or Filly.
13. Hunter.
14. Hackney Pony.
15. Highland Pony.
16. Western Island Pony.
17. Shetland Pony.
18. Harness Horse.
19. Blackface Sheep.
20. Cheviot.
21. Border Leicester.
22. Half-bred.
23. Oxford-Down.
24. Suffolk.
25. Shropshire.
26. Goat.
27. Large White Pig.
28. Middle White.
29. Large Black.
30. Cumberland.
31. Large White Ulster.

NOTE.—*Animals entered as Extra Stock may compete for these Medals. Former Winners of the President's Medals are eligible. The Society shall have the right to photograph the Winners for publication in the 'Transactions.' At this Show no animal can be awarded more than one of these Medals.*

*CATTLE

SHORTHORN

Judges : James Durno, W. T. Garne, jun.

President's Medal for best Shorthorn

ENTRY FEES *Members*	*ENTRY FEES* *Non-Members*	*CLASS*		*PREMIUMS* *First*	*PREMIUMS* *Second*	*PREMIUMS* *Third*
				£	£	£
			[1] **The Duthie Perpetual Challenge Cup,** value £150, for best Animal in the Shorthorn Classes, "Extra Stock" being eligible to compete.			
25/-	45/-	1	**Bull** born before 1st December 1923 . .	15	10	5
25/-	45/-	2	**Bull** born on or after 1st December 1923 and before 1st April 1924	15	10	5
25/-	45/-	3	**Bull** born on or after 1st April 1924, and not later than 30th November 1924 . . .	12	8	4
25/-	45/-	4	**Bull** born on or after 1st December 1924, and not later than 31st March 1925 . . .	12	8	4
25/-	45/-	5	**Bull** born on or after 1st April 1925. . .	10	6	4
			[2] **The Emilio R. Casares, jun., "Junior Champion Cup,"** value £50, for best Shorthorn Bull in Class 5, calved on or after 1st April of the year preceding the Show, that has passed the tuberculin test.			
			[3] **Best Shorthorn Bull in the Show,** entered or eligible for entry in Coates's Herd-Book—£20.			
			[3] **Silver Medal** to the Breeder of the winner of above Prize.			
			Breeder of best Bull of any age in the five Classes—The Silver Medal.			

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* See Rules 32 and 33.

[1] This Cup was gifted by the late Mr William Duthie, Collynie. The Cup may not be won on more than one occasion with the same animal. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica as a memento of his winning the Cup.

[2] Given by Mr Emilio R. Casares, jun. This Cup will become the property of the Exhibitor who shall win it three times, not necessarily in succession. A Silver Medal will be awarded to the winner each year.

[3] Given by the Shorthorn Society.

CATTLE

SHORTHORN—*continued*

Entry Fees				*Premiums*			
Members	*Non-Members*	*Class*		*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
25/-	45/-	6	**Cow** born before 1st December 1923, in Milk	12	8	4	2
25/-	45/-	7	**Cow** or **Heifer** born on or after 1st Dec. 1923	10	5	3	2
25/-	45/-	8	**Heifer** born on or after 1st Dec. 1924 and not later than 31st March 1925	10	5	3	2
25/-	45/-	9	[1] **Heifer** born on or after 1st April 1925	10	5	3	2
			[2] **Best Shorthorn Female in the Show,** entered or eligible for entry in Coates's Herd-Book—£20.				
			[2] **Silver Medal** to the Breeder of the winner of above Prize.				
			Prize Money by Society . £206				
			Contributed Prizes . . 60				

ABERDEEN-ANGUS

Judges: Dr L. B. Beddie, R. L. Grant.

President's Medal for best Aberdeen-Angus Animal

Members	*Non-Members*	*Class*		*First*	*Second*	*Third*	*Fourth*
25/-	45/-	10	**Bull** born before 1st Dec. 1923	15	10	5	3
25/-	45/-	11	**Bull** born on or after 1st Dec. 1923	15	10	5	3
25/-	45/-	12	**Bull** born on or after 1st Dec. 1924	12	8	4	2
			[3] **Ballindalloch Challenge Cup,** value £50, for the best Bull of any age in the three Classes.				
			Breeder of best Bull of any age in the three Classes—The Silver Medal.				
			Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
25/	45/-	13	**Cow** in Milk born before 1st Dec. 1922	12	8	4	2
25/-	45/-	14	**Cow** in Milk born on or after 1st Dec. 1922	12	8	4	2
25/-	45/-	15	**Cow** or **Heifer** born on or after 1st Dec. 1923	10	5	3	2
			[3] **Ballindalloch Challenge Cup,** value £50, for the best Cow of any age in the above Classes.				
			Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
25/-	45/-	16	**Heifer** born on or after 1st Dec. 1924 and before 1st March 1925	10	5	3	2
25/-	45/-	17	**Heifer** born on or after 1st March 1925	10	5	3	2
			[4] **Champion Gold Medal** for best Animal in the Breeding Classes, breeding animals shown as "Extra Stock" being eligible to compete.				
			Prize Money by Society . £204				

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[1] Given by the Scottish Shorthorn Breeders' Associations.

[2] Given by the Shorthorn Society.

[3] "The Ballindalloch Challenge Cups," value £50 each, are offered for the best Bull of any age and best Cow of any age (Heifers excluded) in the Aberdeen-Angus classes, the former presented by the late Sir George Macpherson Grant, Bart., and the latter by the late Sir John Macpherson Grant, Bart. Each Cup will become the property of the Exhibitor who shall win it five times, not necessarily in succession. The breeder of the successful animals each year will receive the Society's Silver Medal, with suitable inscription.

[4] Given by the Aberdeen-Angus Cattle Society.

Entry Fees		*Class*		*Premiums*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
			CATTLE				
			GALLOWAY				
			Judge: David Brown				
			President's Medal for best Galloway				
			[1] **Dr Gillespie Memorial Challenge Trophy**, value £50, for best Galloway Animal in the Breeding Classes, breeding animals shown as "Extra Stock" being eligible to compete—see conditions below.				
25/-	45/-	18	**Bull** born before 1st Dec. 1923	15	10	5	3
25/-	45/-	19	**Bull** born on or after 1st Dec. 1923	15	10	5	3
25/-	45/-	20	**Bull** born on or after 1st Dec. 1924	12	8	4	2
			Breeder of best Bull of any age in the three Classes—The Silver Medal.				
25/-	45/-	21	**Cow** of any age in Milk	12	8	4	2
25/-	45/-	22	**Cow** or **Heifer** born on or after 1st Dec. 1923	10	5	3	2
25/-	45/-	23	**Heifer** born on or after 1st Dec. 1924	10	5	3	2
			PRIZE MONEY BY SOCIETY . £158				
			BELTED GALLOWAY				
			Judge: George Clark				
			President's Medal for best Belted Galloway Animal				
			[2] **Knockbrex Challenge Cup**, value £50, for the best Belted Galloway Animal, "Extra Stock" being eligible to compete.				
25/-	45/-	24	**Bull** born before 1st December 1924	10	5	3	2
25/-	45/-	25	**Bull** born on or after 1st December 1924	10	5	3	2
25/-	45/-	26	**Cow** or **Heifer** born before 1st December 1923, in Milk or in Calf; if in calf, to calve on or before 1st December of the year of the Show	10	5	3	2
25/-	45/-	27	**Heifer** born on or after 1st December 1923	10	5	3	2
25/-	45/-	28	**Heifer** born on or after 1st December 1924	10	5	3	2
			PRIZE MONEY BY SOCIETY . . £80				
			[3] CONTRIBUTED PRIZES . . . 20				

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[1] This Trophy is offered by the Galloway Cattle Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Galloway animal registered in the Galloway Herd-Book, entered in any of the breeding classes, at the Show or Shows at which it may be competed for. The winner of the Trophy shall, before delivery thereof is made to him, give security to the Galloway Cattle Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive the Galloway Cattle Society's Silver Medal as a memento of his winning the Trophy.

[2] This Cup was presented by Mrs Brown, Kirkbrex, Glasgow, for the best Belted Galloway animal registered in the Dun and Belted Galloway Cattle Breeders' Association Herd-Book, entered in any of the breeding classes, at the Show at which it may be competed for. The winner of the Trophy shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive a Silver Medal as a memento of his winning the Trophy.

[3] Contributed by the Dun and Belted Galloway Cattle Breeders' Association.

CATTLE

HIGHLAND

Judge: James Cameron

President's Medal for best Highland Animal

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
25/-	45/	29	**Bull** born before 1924	15	10	5	3
25/-	45/-	30	**Bull** born in 1924	15	10	5	3
25/-	45/-	31	**Bull** born in 1925	12	8	4	2
			[1]**Perpetual Victory Challenge Cup,** approximate value 50 Guineas, for the best Animal in the Male Classes, "Extra Stock" being eligible to compete.				
			Breeder of best Bull of any age in the three Classes—The Silver Medal.				
25/-	45/-	32	**Cow** of any age in Milk	12	8	4	2
25/-	45/-	33	**Cow** or **Heifer** born in 1923	10	5	3	2
25/-	45/-	34	**Heifer** born in 1924	10	5	3	2
			[1]**Perpetual Victory Challenge Cup,** approximate value 35 Guineas, for the best Animal in the Female Classes, "Extra Stock" being eligible to compete.				

PRIZE MONEY BY SOCIETY . . £158

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[1] Given by the Highland Cattle Society of Scotland.

CATTLE

AYRSHIRE

Judges: W. L. Ferguson, Jacob S. Murray

1. To be eligible for competition in the Ayrshire Classes Cows must have an authenticated Milk Yield, and younger Females and Bulls an authenticated Milking Pedigree, of a definite minimum amount.

2. The minimum amount referred to shall be as follows, calculated on the basis of a period between calvings of 52 weeks, and 3·8 per cent of butter fat:—

(a) Cows which have completed two or more lactations—700 gallons.
(b) Cows which have completed only one lactation—600 gallons.
(c) Younger Females and Bulls—an authenticated Milking Pedigree for dam and dam of sire on a similar basis.

3. In the case of Cows with two or more lactations the record lodged may be that for any year the Exhibitor may select.

4. The evidence of Milk Yield and Milking Pedigree shall be in the form of a Certificate signed by the Secretary of the Scottish Milk Records Association. The Certificate, besides giving the actual yields, shall give these calculated on a uniform basis of a period of 52 weeks between calvings, and 3·8 per cent butter fat. This latter figure shall be communicated to the Judges before adjudicating.

In the case of Exhibitors founding on the Milk Yield of any animal, or animals, made in England, said Exhibitors must forward their Record Books, together with a Certificate from a competent analyst, stating that a butter fat test had been made at least once every 28 days during the period of lactation, and with details of said butter fat tests attached, to the Secretary of the Scottish Milk Records Association, who has undertaken to check the records and to certify same.

5. The authenticated Milk Yields and authenticated Milking Pedigrees shall appear in the Catalogue.

***N.B.*—Certificates above referred to must be lodged with Entries.**

President's Medal for best Ayrshire

Entry Fees: Members	Entry Fees: Non-Members	Class		Premiums: First £	Premiums: Second £	Premiums: Third £
			[1] **Cowhill Champion Cup**, approximate value £30, for best Animal of the Ayrshire breed, entered with a number in the Herd-Book. The Cup to be won three times, not necessarily in succession, by the same person with different animals, before becoming the property of the winner.			
45/-	65/-	35	[2] **Cow** in Milk,* born before 1923	12	8	4
45/-	65/-	36	[2] **Cow** in Milk,* born on or after 1st Jan. 1923 .	10	7	3
45/-	65/-	37	[2] **Cow** of any age in Calf,* and due to calve before 1st Dec. of the year of the Show	10	7	3
25/-	45/-	38	**Heifer** born in or after 1923, in Calf and due to calve before 1st Dec. of the year of the Show .	10	7	3
25/-	45/-	39	**Heifer** born in 1924	10	5	3
25/-	45/-	40	**Heifer** born in 1925	8	5	3
			[3] **Special Prize of £10** for the best Female Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st June 1926.			

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[1] Presented by Major Henry Keswick, Cowhill Tower, Dumfries, to Ayrshire Cattle Herd-Book Society, to be competed for annually at the Shows of the Highland and Agricultural Society of Scotland.

[2] Cows in these Classes must have produced a calf within fifteen months prior to the Show.

[3] Given by the Ayrshire Cattle Herd-Book Society.

* See Rule 72.

CATTLE

ENTRY FEES		*CLASS*		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
			### AYRSHIRE—*continued*	£	£	£
25/-	45/-	41	**Bull** born before 1924	12	8	4
25/-	45/-	42	**Bull** born in 1924	10	7	3
25/-	45/-	43	**Bull** born in 1925	8	5	3
			Breeder of best Bull of any age in Classes 41, 42, and 43—The Silver Medal.			
			[1] **Special Prize of £10** for the best Male Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st June 1926.			
			Prize Money by Society . . . £178			
			Contributed Prizes 20			
			### †BRITISH FRIESIAN			
			Judges: Andrew Hamilton, J. L. Nisbet			
			President's Medal for best British Friesian Animal			
			[2] **The MacRobert Champion Silver Bell,** value 50 Guineas, for the best Animal in the British Friesian Classes, registered in or eligible for entry in the British Friesian Cattle Herd-Book, "Extra Stock" being eligible to compete.			
45/-	65/-	44	[3] **Cow** in Milk,* born in or before 1922 . .	10	5	3
45/-	65/-	45	[3] **Cow** in Calf,* and not in Milk, born in or before 1922	10	5	3
45/-	65/-	46	[3] **Cow** in Milk, born in 1923 or 1924 . . .	10	5	3
25/-	45/-	47	**Heifer** born in 1924	10	5	3
25/-	45/-	48	**Heifer** born in 1925, before 1st July . . .	10	5	3
25/-	45/-	49	**Heifer** born in 1925, on or after 1st July . .	10	5	3
			Champion Prize of £5 given by the British Friesian Cattle Society for the best Female exhibited.			
25/-	45/-	50	**Bull** born in or before 1923	10	5	3
25/-	45/-	51	**Bull** born in 1924	10	5	3
25/-	45/-	52	**Bull** born in 1925	10	5	3
			Breeder of Best Bull of any age in Classes 50, 51, and 52—The Silver Medal.			
			Champion Prize of £5 given by the British Friesian Cattle Society for the best Male exhibited.			
			Prize Money by Society . . . £108			
			[4] Contributed Prizes 64			

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[1] Given by the Ayrshire Cattle Herd-Book Society.

[2] Presented by Lady Rachel Workman MacRobert, Douneside, Tarland. This Bell will become the property of the Exhibitor who shall win it three times, not necessarily in succession. The winner of the Bell on each occasion will receive a miniature replica in silver as a memento of his winning the Bell. The Breeder of the winning animal will also receive a replica, provided he is not also the Exhibitor.

[3] Cows in these Classes must have produced a calf within fifteen months prior to the Show.

[4] Contributed by the British Friesian Cattle Society.

* See Rule 72.

† The awards in the British Friesian Cattle Society's Scottish "Derby" and "Oaks" Competitions will be made at the Show to animals eligible for such competitions and also entered in their respective Classes—viz. 48 49 and 52.

CATTLE

RED POLL

Judge: Davis Brown

President's Medal for best Red Poll Animal

[1] **Kinmount Challenge Cup**, value about £50, for the best Female Animal in the Red Poll Classes registered in the Red Poll Cattle Society's Herd-Book, "Extra Stock" being eligible to compete.

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	PREMIUMS Second £	PREMIUMS Third £
25/-	45/-	53	[2] **Cow** in Milk, born before 1924	10	5	3
25/-	45/-	54	**Heifer** born in 1924	10	5	3
25/-	45/-	55	**Heifer** born in 1925	10	5	3
25/-	45/-	56	**Bull** born in or before 1924	10	5	3
25/-	45/-	57	**Bull** born in 1925	10	5	3

PRIZE MONEY BY SOCIETY	£65
[3] CONTRIBUTED PRIZES	25

DEXTER

Judge: Theo. A. Stephens.

President's Medal for best Dexter Animal

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	PREMIUMS Second £	PREMIUMS Third £
25/-	45/-	58	[2] **Cow** of any age in Milk or in Calf	10	5	–
25/-	45/-	59	***Heifer** born in or after 1924	10	5	–

PRIZE MONEY BY SOCIETY	£10
[4] CONTRIBUTED PRIZES	20

PRIZE MONEY BY SOCIETY	£1167 0
CONTRIBUTED	209 0
CUPS, MEDALS, &c.	631 15
Total Prizes for Cattle	**£2007 15**

[See Note as to **EXTRA STOCK**, p. 116.]

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[1] This Cup was presented to the Society by Lieut.-Colonel Charles Brook of Kinmount, Annan. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so.

[2] Cows in these Classes must have produced a calf within fifteen months prior to the Show.

[3] Contributed by Red Poll Cattle Society.

[4] £10 contributed by Sir Robert Usher and Lady Usher, £5 by Lady Kinloch, and £5 by the Dexter Cattle Society.

* See Rule 13.

* HORSES

FOR AGRICULTURAL PURPOSES

Judges: James Barrie, Alexander Clark, George Findlater, James Fleming (Barns of Claverhouse), James Fleming (Easter Coul), Robert Mackay.

DRAUGHT STALLIONS

President's Medal for best Clydesdale Stallion or Colt

[1] **Cawdor Challenge Cup**, value 50 Guineas, for best Clydesdale Stallion or Colt.

Entry Fees *Members*	*Entry Fees* *Non-Members*	*Class*		*Premiums* *First* £	*Second* £	*Third* £	*Fourth* £
55/-	75/-	60	**Stallion** born before 1923	20	15	10	4
55/-	75/-	61	**Entire Colt** born in 1923	20	15	10	4
55/-	75/-	62	**Entire Colt** born in 1924	20	15	10	4
40/-	60/-	63	**Entire Colt** born in 1925	15	10	6	4

Breeder of best Male Animal of any age in Classes 60, 61, 62, and 63—The Silver Medal.

PRIZE MONEY BY SOCIETY . £182

DRAUGHT GELDINGS

President's Medal for best Draught Gelding

Entry Fees *Members*	*Entry Fees* *Non-Members*	*Class*		*Premiums* *First* £	*Second* £	*Third* £	*Fourth* £
40/-	60/-	64	**Draught Gelding** born before 1923	10	5	3	–
40/-	60/-	65	**Draught Gelding** born in 1923	8	5	3	–
40/-	60/-	66	**Draught Gelding** born in 1924	8	5	3	–

PRIZE MONEY BY SOCIETY . £50

*** For prizes given by the Society, no animal is allowed to compete in more than one Class, except that horses entered in other Classes may also compete in the Jumping and Harness Classes.**

[1] This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland (subject to conditions of that Society) for the best Clydesdale Stallion or Colt registered in the Clydesdale

proof be furnished to satisfy a Committee, appointed for this purpose by the Council of the Clydesdale Horse Society, that he has during the preceding season left at least 35 per cent of the mares served by him in foal. The Cup must be won four times by an Exhibitor with different animals (but not necessarily in consecutive years) before it becomes his absolute property. The animal winning this Cup must be certified free from hereditary disease. The winner of the Cup, other than the absolute winner, shall, before delivery thereof is made to him, give security to the Clydesdale Horse Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. Until the Cup be won outright, the winner on each occasion will receive the Clydesdale Horse Society's Silver Medal as a memento of his winning the Cup.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
			HORSES				
			DRAUGHT MARES AND FILLIES				
			President's Medal for best Clydesdale Mare or Filly				
			[1] **Cawdor Challenge Cup,** value 50 Guineas, for best Clydesdale Mare or Filly.	£	£	£	£
55/-	75/-	67	**Mare** of any age, with Foal at foot . . .	20	12	7	4
40/-	60/-	68	**Yeld Mare** born before 1923. . . .	15	9	6	4
40/-	60/-	69	**Yeld Mare or Filly** born in 1923 . . .	15	9	6	4
40/-	60/-	70	**Filly** born in 1924	15	9	6	4
40/-	60/-	71	**Filly** born in 1925	15	9	6	4
			[2] **William Taylor Memorial Prize of £10 and Certificate** to the breeder of the best Clydesdale Filly entered in Classes 70 and 71.				
			Prize Money by Society . . £179				
			Contributed Prize . . . 10				
			Total Prize Money for Draught Horses, £421				
			HUNTERS				
			Judges: Major Denis St. G. Daly, Captain T. L. Wickham-Boynton				
			(*Classes* 72 *to* 79 *to be judged at* 10 A.M. *on Tuesday, 29th June*)				
			President's Medal for best Hunter in Classes 72 *to* 83 *inclusive*				
			[3] **Paisley Perpetual Gold Challenge Cup,** value £300, for best Hunter, "Extra Stock," being eligible to compete.				
55/-	75/-	72	**Hunter Brood Mare,** with Foal at foot . .	15	7	3	–
55/-	75/-	73	**Foal,** any sex	7	4	2	–
			[If the foal is also entered with its dam in Class 72, the entry fee will be 5/- for Members and 7/6 for Non-Members.]				

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[1] This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Clydesdale Mare or Filly registered in the Clydesdale Stud-Book, entered in any of the Draught Horse Classes, at the Show at which it may be competed for. The Cup must be won four times by an Exhibitor with different animals (but not necessarily in consecutive years) before it becomes his absolute property. The animal winning this Cup must be certified free from hereditary disease. The winner of the Cup, other than the absolute winner, shall, before delivery thereof is made to him, give security to the Clydesdale Horse Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. Until the Cup be won outright, the winner on each occasion will receive the Clydesdale Horse Society's Silver Medal as a memento of his winning the Cup.

[2] Given by William Taylor Memorial Committee.

[3] This Cup, along with an endowment of £600, was provided from money collected in Paisley by the late Provost Muir M'Kean, and is in commemoration of the Society's first Show at Paisley in 1913. This year the Cup is offered for the best Hunter. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

HUNTERS—*continued*

Entry Fees		*Class*		*Premiums*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
40/-	60/-	74	**Gelding** born in 1923—*in hand*	10	5	3
40/-	60/-	75	**Filly** born in 1923—*in hand*. . . .	10	5	3
40/-	60/-	76	**Gelding** born in 1924—*in hand* . . .	10	5	3
40/-	60/-	77	**Filly** born in 1924—*in hand* . . .	10	5	3
40/-	60/-	78	**Colt or Gelding** born in 1925—*in hand* . .	10	5	3
40/-	60/-	79	**Filly** born in 1925—*in hand*. . . .	10	5	3
			[If there are less than 3 entries in any of the Classes 74 to 79, the Geldings or Colts and Fillies of the same age will be judged as one Class.]			
			(*Classes* 80 *to* 84 *to be judged at* 2.30 P.M. *on Tuesday, 29th June*)			
40/-	60/-	80	**Mare or Gelding** born before 1922, to carry 14 stone 7 lb. and upwards—*in saddle* . .	15	10	5
40/-	60/-	81	**Mare or Gelding** born before 1922, to carry 13 stone and under 14 stone 7 lb.—*in saddle* .	15	10	5
40/-	60/-	82	**Mare or Gelding** born before 1922, to carry under 13 stone—*in saddle*	15	10	5
40/-	60/-	83	**Mare or Gelding** born in 1922—*in saddle* . .	15	10	5
40/-	60/-	84	**Hack of Hunter Type** born before 1923, 15.2 hands and under—*in saddle* . . .	8	5	3
			Special Prize for the best animal in Classes 72 to 79 owned by a Tenant-Farmer, or by an occupying owner whose rental does not exceed £500 .	10	–	–
			Special Prize for the best animal in Classes 80 to 84 owned by a Tenant-Farmer, or by an occupying owner whose rental does not exceed £500 .	10	–	–
			[1] **Best Hunter Filly,** not exceeding three years old, registered with a number in the Hunter Stud-Book, or the entry tendered within a month of the award—Champion Gold Medal.			
			PRIZE MONEY BY SOCIETY . £229 10			
			[2] CONTRIBUTED PRIZES . . . 72 10			

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[1] Given by the Hunters' Improvement and National Light Horse Breeding Society.

[2] £52, 10s. contributed by Duke of Buccleuch's Hunt, and £20 by Colonel Charles Hope of Cowdenknowes, Earlston.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

ENTRY FEES		CLASS		PREMIUMS		
Members	Non-Member			First £	Second £	Third £
			HORSES			
			HACKNEY PONIES			
			Judge: Walter Briggs			
			(To be judged at 10 A.M. *on Tuesday,* 29*th June)*			
			President's Medal for best Hackney Pony			
40/-	60/-	85	**Stallion,** 3 years old and upwards, 14 hands and under—*in hand*	5	3	2
40/-	60/-	86	**Yeld Mare, Filly, or Gelding,** 3 years old and upwards, 14 hands and under—*in saddle* . .	5	3	2
			PRIZE MONEY BY SOCIETY . . £20			
			[1] HIGHLAND PONIES			
			Judge: William Logan, O.B.E., M.R.C.V.S.			
			President's Medal for best Highland Pony			
			(To be judged at 1.30 P.M. *on Tuesday,* 29*th June)*			
40/-	60/-	87	**Stallion** born before 1924, not exceeding 14.2 hands	8	4	2
40/-	60/	88	**Mare** born before 1924, not exceeding 14.2 hands, yeld or with Foal at foot	8	4	2
40/-	60/-	89	**Entire Colt** born on or after 1st January 1924 .	6	4	2
40/-	60/-	90	**Filly** born on or after 1st January 1924 . .	6	4	2
			[2] **Special Prize of £10** for the best Highland Stallion, Mare, Colt, or Filly, entered or accepted for entry in the Highland Section of the National Pony Stud-Book, "Extra Stock" being eligible to compete. Competition to be strictly confined to animals passed sound and free from hereditary disease.			
			PRIZE MONEY BY SOCIETY . . £12 CONTRIBUTED PRIZES . . 50			

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[1] The Board of Agriculture for Scotland gives £40 towards prizes for Highland Ponies.
[2] Given by the National Pony Society and the Highland Pony Society.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

ENTRY FEES		CLASS		PREMIUM		
Members	Non-Members			First	Second	Third
			HORSES	£	£	£
			WESTERN ISLAND PONIES			
			Judge: Charles D. M. Ross			
			(*To be judged at* 1.30 P.M. *on Tuesday, 29th June*)			
			President's Medal for best Western Island Pony			
40/-	60/-	91	**Stallion** born before 1924, not exceeding 14 hands .	8	4	2
40/-	60/-	92	**Mare** born before 1924, not exceeding 14 hands, yeld or with Foal at foot	8	4	2
40/-	60/-	93	**Entire Colt** born on or after 1st January 1924 .	6	4	2
40/-	60/-	94	**Filly** born on or after 1st January 1924 . .	6	4	2
			[1] **Special Prize of £10** for the best Western Island Stallion, Mare, Colt, or Filly, entered or accepted for entry in the Highland Section of the National Pony Stud-Book, "Extra Stock" being eligible to compete. Competition to be strictly confined to animals passed sound and free from hereditary disease.			
			PRIZE MONEY BY SOCIETY . . £52			
			CONTRIBUTED PRIZES . . . 10			
			SHETLAND PONIES			
			Judges: Charles Aitkenhead, F. N. M. Gourlay			
			(*To be judged at* 1.30 P.M. *on Tuesday, 29th June*)			
			(*All to be shown in hand*)			
			President's Medal for best Shetland Pony			
35/-	55/-	95	**Stallion,** not exceeding 10½ hands, born before 1923	8	5	3
35/-	55/-	96	**Entire Colt,** not exceeding 10½ hands, born in 1923 or 1924	8	5	3
35/-	55/-	97	**Mare,** not exceeding 10½ hands, with Foal at foot .	8	5	3
35/-	55/-	98	**Yeld Mare,** not exceeding 10½ hands . .	8	5	3
35/-	55/-	99	**Filly,** not exceeding 10½ hands, born in 1923 or 1924	8	5	3
			[2] **Silver Cup** for best Shetland Pony of either sex and any age, drawn from ordinary Classes—*and shown in saddle.* (*To be judged by Hunter Judge.*)			
			[3] **Best Group of Shetland Ponies,** consisting of one male and two females, of any age, entered in above Classes	10	-	-
			[4] **Silver Medal** for the best Shetland Pony of the sex opposite to that of the winner of the President's Medal, entered or eligible for entry in the Shetland Pony Stud-Book.			
			PRIZE MONEY BY SOCIETY . . £90			
			CONTRIBUTED PRIZES . . 10			

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[1] Given by the National Pony Society and the Highland Pony Society.

[2] Given by a past President of the Shetland Pony Stud-Book Society. If less than three competitors the Cup will not be awarded.

[3] Given by "Four Lovers of the Breed," per Mr W. Mungall of Transy.

[4] Given by the Shetland Pony Stud-Book Society.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

RIDING PONIES

(To be judged by Hunter Judges at 4 P.M. on Wednesday, 30th June)

ENTRY FEES		*CLASS*		*PREMIUM*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
5/-	5/-	100	**Mare or Gelding,** any age, over 12 hands and not exceeding 14 hands, in saddle, to be ridden by boy or girl 10 years and under 14 years of age on first day of Show	5	3	2
5/-	5/-	101	**Mare or Gelding,** any age, not exceeding 12 hands, in saddle, to be ridden by boy or girl under 10 years of age on first day of Show . .	5	3	2

PRIZE MONEY BY SOCIETY . . **£20**

[Ponies in Classes 100 and 101 must be in the Showyard not later than 3 P.M. on Wednesday, and may leave immediately after the Afternoon Parade on Thursday.]

[1]HORSES IN HARNESS

Judge: Walter Briggs

(To be judged at 11 A.M. on Wednesday, 30th June)

(All animals to be driven in the Parade Ring)

[2]***President's Medal for best animal in the Classes for Horses in Harness***

[3]**The "Glasgow" Champion Challenge Cup,** value £50, for best Horse in Single Harness, limited to First, Second, and Third Prize-Winners in Harness Classes, and animals entered as "Extra Stock."

Members	*Non-Members*	*CLASS*		*First*	*Second*	*Third*
40/-	60/-	102	**Yeld Mare, Filly, or Gelding,** any age, in Harness, exceeding 15 hands, to be driven in the ring .	15	10	5

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[1] Animals entered in other Classes may be entered in the Harness Classes at an additional fee of 5s. if they are eligible.

[2] *An animal that has won a President's Medal in another section in this Show shall not be eligible to compete for the Medal in this section.*

[3] The "Glasgow" Challenge Cup is offered for the best Horse in Single Harness, and will become the property of the Exhibitor who shall win it three times, not necessarily in succession. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive a silver memento of his winning the Cup.

Shed accommodation for machines for Driving Competitions—Members, 10s.; Non-Members, 20s.

HORSES

HORSES IN HARNESS—*continued*

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	PREMIUMS Second £	PREMIUMS Third £
40/-	60/-	103	**Yeld Mare, Filly, or Gelding,** any age, in Harness, over 14 hands and not exceeding 15 hands, to be driven in the ring	15	10	5
40/-	60/-	104	**Yeld Mare, Filly, or Gelding,** any age, not exceeding 14 hands, to be driven in the ring .	10	5	3
			PRIZE MONEY BY SOCIETY . . £78			

[Horses in Harness Classes must be in Showyard not later than Tuesday evening, judged on Wednesday, and may leave the Showyard on Thursday immediately after the Afternoon Parade.]

PRIZE MONEY BY SOCIETY . .	£912 10
CONTRIBUTED	152 10
CUPS, MEDALS, &c. . . .	475 0
Total Prizes for Horses .	**£1540 0**

[See Note as to **EXTRA STOCK,** p. 116.]

JUMPING COMPETITIONS

SPECIAL REGULATIONS

(*See also the Regulations on pages* 80 *to* 87)

1. Jumping Competitions will take place on the afternoons of Wednesday, Thursday, and Friday, 30th June, 1st and 2nd July, and on the evening of Thursday, 1st July.
2. *Entries* for each day's Competitions will close at the Secretary's Office in the Showyard at 6 P.M. on the preceding day. Entries for Evening Jumping may be received till the beginning of the Competition.
3. *Entry Fees.*—Wednesday, £1; Thursday and Friday, 10s. for each class. Evening Jumping, 10s.
4. *Accommodation* for jumping horses will be provided as follows: Covered shed in which to stand during the day free of charge; or, on application to the Secretary not less than ten days before the opening of the Show, stalls or loose-boxes will be provided at a charge (in addition to the Entry Fee) of £2 for a stall and £3 for a loose-box, which must be paid along with the Entry Fee at the time of application.
5. Horses entered for jumping only need not enter the Showyard till 12 noon on the day of Competition, and may leave the Showyard at the close of the jumping.
6. *The Jumps* may consist of Single Hurdle, Gate, Double Hurdle, Wall, and Water Jump, power being reserved by the Society to alter these, as well as the Handicaps, as may be thought desirable.

Entry Fee	*Class*		*First*	*Second*	*Third*	*Fourth*	*Fifth*
			£	£	£	£	£
		WEDNESDAY.					
20/-	1	Horse or Pony any height	20	15	10	5	3
		THURSDAY.					
10/-	2	**Horse or Pony** any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in Class 1	10	8	5	3	2
		FRIDAY.					
10/-	3	**Horse or Pony** any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in either of Classes 1 or 2—4 inches extra for the winner of the two first prizes in Classes 1 and 2	10	8	5	3	2
		Champion Prize for most points in Prizes with one or more horses in above Classes—First Prize to count five points; Second Prize, four points; Third Prize, three points; Fourth Prize, two points; and Fifth Prize, one point—the money to be evenly divided in the event of a tie . .	10	-	-	-	-
		THURSDAY EVENING.					
10/-	4	**Horse or Pony** any height	10	8	5	3	2
		Total Prize Money for Jumping, £147					

Special Entry Forms for above Competitions to be had on application.

SHEEP

*BLACKFACE

Judges: Peter M'Intyre, J. J. Morton,
Gavin Struthers

President's Medal for best animal of the Blackface breed

Entry Fees		*Class*		*Premiums*			
Members	*Non-Members*			*First* £	*Second* £	*Third* £	*Fourth* £
15/-	25/-	105	**Tup** above one shear	12	8	4	2
15/-	25/-	106	**Shearling Tup**	12	8	4	2
15/-	25/-	107	**Shearling Tup**, which shall have been entirely out-wintered, and not housed or house-fed at any time, and not clipped *before* 21st May 1926	12	8	4	2
15/-	25/-	108	**Tup Lamb**	5	3	2	–
15/-	25/-	109	**Ewe** above one shear, with her **Lamb** at foot	10	5	2	–
15/-	25/-	110	**Shearling Ewe or Gimmer**	10	5	2	–

PRIZE MONEY BY SOCIETY . . £122

CHEVIOT

Judges: Thomas Elliot, James Jeffrey,
William Moffat.

President's Medal for best animal of the Cheviot breed

[1] **Fife and Kinross Perpetual Gold Challenge Cup,** value £200, for best Group of Cheviot Sheep comprising a Ram, a Ewe, and a Gimmer, the Ewe and Gimmer to be bred by Exhibitor, "Extra Stock" being eligible to compete.

[2] **Perpetual Challenge Cup,** value £25, gifted by Mr J. Borthwick, for best Sheep in the Cheviot classes.

Members	*Non-Members*	*Class*		*First* £	*Second* £	*Third* £	*Fourth* £
15/-	25/-	111	**Tup** above one shear	12	8	4	2
15/-	25/-	112	**Shearling Tup**	12	8	4	2
15/-	25/-	113	**Tup Lamb**	5	3	2	–
15/-	25/-	114	**Ewe** above one shear, with her **Lamb** at foot	10	5	2	–
15/-	25/-	115	**Shearling Ewe or Gimmer**	10	5	2	–

PRIZE MONEY BY SOCIETY . . £96

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* Formal Declarations must be made at time of entry that the conditions as regards clipping, &c., have been strictly adhered to.

[1] This Cup, along with an endowment of £400, was subscribed for by the Counties of Fife and Kinross in commemoration of the Society's first Show at Cupar-Fife in 1912. This year the Cup is offered for the best Group of Cheviot Sheep. The animals winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

[2] Given by Cheviot Sheep Society.

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
			SHEEP				
			BORDER LEICESTER	£	£	£	£
			Judges : James Howie, James C. Jeffrey, John Lawson				
			President's Medal for best animal of Border Leicester breed				
			[1] **Tweeddale Gold Medal** for best Border Leicester Tup.				
15/-	25/-	116	**Tup** above one shear	12	8	4	2
15/-	25/-	117	**Shearling Tup**	12	8	4	2
			[2] **Gold Medal** for best Male Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.				
15/-	25/-	118	**Ewe** above one shear	10	5	2	–
15/-	25/-	119	**Shearling Ewe or Gimmer**	10	5	2	–
			[2] **Gold Medal** for best Female Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.				
			PRIZE MONEY BY SOCIETY . . £86				
			HALF-BRED				
			Judge : John M'Dougal				
			President's Medal for best Half-Bred Animal				
			[3] **Renfrewshire Perpetual Gold Challenge Cup,** value £250, for best Half-Bred Ewe or Gimmer, "Extra Stock" being eligible to compete.				
15/-	25/-	120	**Tup** above one shear	10	7	3	–
15/-	25/-	121	**Shearling Tup**	10	7	3	–
15/-	25/-	122	**Ewe** above one shear	10	5	2	–
15/-	25/-	123	**Shearling Ewe or Gimmer**	10	5	2	–
15/-	25/-	124	**Three Ewe Lambs**	5	3	2	–
			PRIZE MONEY BY SOCIETY . . £84				

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[1] Annual Free Income from Fund of £500.

[2] Given by the Society of Border Leicester Sheep-Breeders.

[3] This Cup, along with an endowment of £500, was provided from money collected in Renfrewshire by the late Provost Muir MacKean of Paisley, and is in commemoration of the Society's first Show in the county of Renfrew in 1913. This year the Cup is offered for the best Half-Bred Ewe or Gimmer. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

ENTRY FEES		CLASS		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
			SHEEP	£	£	£
			OXFORD-DOWN			
			Judge : J. M. Eady			
			(*All sheep to be entered or eligible for entry in the Flock-Book*)			
			President's Medal for best Oxford-Down Animal			
			[1] **Scottish Oxford-Down Sheep-Breeders' Challenge Bowl,** value £50, for the best Oxford-Down Animal bred in Scotland, to be won three times by the same owner, but with different sheep, before becoming his property.			
15/-	25/-	125	**Shearling Tup**	8	5	3
15/-	25/-	126	**Shearling Ewe or Gimmer**	8	5	3
15/-	25/-	127	**Tup Lamb**	8	5	3
15/-	25/-	128	**Three Ewe Lambs**	8	5	2
			Prize Money by Society . . £42			
			[1] Contributed Prizes . . 21			
			SUFFOLK			
			Judge : G. A. Goodchild			
			(*All sheep to be entered or eligible for entry in the Flock-Book*)			
			President's Medal for best Suffolk Sheep			
15/-	25/-	129	**Tup,** one shear and over	8	5	3
15/-	25/-	130	**Shearling Ewe or Gimmer**	8	5	3
15/-	25/-	131	**Tup Lamb**	8	5	3
15/-	25/-	132	**Three Ewe Lambs**	8	5	2
			Prize Money by Society . . £38			
			[2] Contributed Prizes . . 25			
			SHROPSHIRE			
			Judge : E. Craig Tanner			
			President's Medal for best Shropshire Animal			
15/-	25/-	133	**Shearling Tup**	6	4	2
15/-	25/-	134	**Shearling Ewe or Gimmer**	5	3	2
			Prize Money by Society . . £22			
			FAT SHEEP			
			Judge : George Findlater			
15/-	25/-	135	**Three Fat Lambs,** any breed or cross, dropped in the year of the Show	5	3	2
			[Exhibitors of Fat Sheep are requested to state the breed of sire and dam when making their entries.]			
			Prize Money by Society . . £10			

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[1] Given by Oxford-Down Sheep-Breeders' Association.
[2] Given by the Suffolk Sheep Society.

SHEEP

SHEPHERDS' PACK CLASSES

Judges: The Judges of the respective breeds

A Gold Medal will be presented by the President for the best Animal in each of the four sections

ENTRY FEES		*CLASS*		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
			BLACKFACE			
5/-	5/-	136	**Ewe** above one shear, with her lamb at foot	3	2	1
5/-	5/-	137	**Shearling Ewe or Gimmer**	3	2	1
5/-	5/-	138	**Ewe Lamb**	3	2	1
			CHEVIOT			
5/-	5/-	139	**Ewe** above one shear, with her lamb at foot	3	2	1
5/-	5/-	140	**Shearling Ewe or Gimmer**	3	2	1
5/-	5/-	141	**Ewe Lamb**	3	2	1
			BORDER LEICESTER			
5/-	5/-	142	**Ewe** above one shear, with her lamb at foot	3	2	1
5/-	5/-	143	**Shearling Ewe or Gimmer**	3	2	1
5/-	5/-	144	**Ewe Lamb**	3	2	1
			HALF-BRED			
5/-	5/-	145	**Ewe** above one shear, with her lamb at foot	3	2	1
5/-	5/-	146	**Shearling Ewe or Gimmer**	3	2	1
5/-	5/-	147	**Ewe Lamb**	3	2	1

[Animals entered in these classes cannot also be entered in the ordinary classes.]

PRIZE MONEY BY SOCIETY . . £72

PRIZE MONEY BY SOCIETY	£572	0
CONTRIBUTED	46	0
CUPS, MEDALS, &c.	595	0
Total Prizes for Sheep	£1213	0

[See Note as to EXTRA STOCK, p. 116.]

*GOATS

Judge: Mrs Reginald Pease

President's Medal for best animal in the Goat Classes

(All animals must be registered)

[1] **Challenge Cup,** value 20 Guineas, for the best Female Goat in the Show.

[2] **Challenge Cup,** value £10, for best Female Anglo-Nubian Goat over two years old, in Milk, entered in the Anglo-Nubian section of the Herd-Book, "Extra Stock" being eligible to compete.

ENTRY FEES		*CLASS*		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
5/-	10/-	148	**Male Goat,** any variety, over two years . .	3	2	1
5/-	10/-	149	**Male Goat,** any variety, over one but not exceeding two years	3	2	1
5/-	10/-	150	**Male Kid,** any variety, not exceeding one year .	3	2	1
5/-	10/-	151	**Female Goat,** Anglo-Nubian, in Milk . .	3	2	1
5/-	10/-	152	**Female Goat,** any other variety, in Milk . .	3	2	1
5/-	10/-	153	**Goatling,** any variety, over one but not exceeding two years	3	2	1
5/-	10/-	154	**Female Kid,** any variety, not exceeding one year .	3	2	1

NOTE.—No animal is allowed to compete in more than one Class.

PRIZE MONEY BY SOCIETY . . .	£30
BOARD OF AGRICULTURE FOR SCOTLAND . .	12
CUPS	31
Total Prizes for Goats . .	**£73**

[See Note as to **EXTRA STOCK**, p. 116.]

The Competition for Goats is recognised by the British Goat Society, 10 Lloyds Avenue, London, E.C.3, which will give Challenge Certificates (qualifying for a Championship) for the best Male Goat over one year, for the best Female Goat over two years that has borne a kid; a Breed Challenge Certificate for the best Anglo-Nubian Female Goat over two years that has borne a kid; a Bronze Medal for the best female exhibit in Classes 151, 152, 153, and 154; and a Bronze Medal for the best male exhibit in Classes 148, 149, and 150.

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[1] Given by Lord Dewar, London—to be competed for annually.

[2] Given by Mrs S. Macdonald, Garrochty—to be competed for annually.

* For Regulations see page 94.

*PIGS

LARGE WHITE

Judge : R. P. Haynes

(All Large White Pigs to be entered or eligible for entry in the Herd-Book of the National Pig-Breeders' Association)

President's Medal for best Large White Pig

[1] **Gold Medal**, value £5, for the best Large White Pig in the Show.

ENTRY FEES		CLASS		PREMIUMS		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
15/-	25/-	155	**Boar** born before 1925 . . .	8	4	2
15/-	25/-	156	**Boar** born in 1925	8	4	2
15/-	25/-	157	**Boar** born in 1926	6	3	1
15/-	25/-	158	**Sow** born before 1925	8	4	2
15/-	25/-	159	**Sow** born in 1925	8	4	2
15/-	25/-	160	**Sow** born in 1926	6	3	1

PRIZE MONEY BY SOCIETY . . £76

MIDDLE WHITE

Judge : W. Buckle

(All Middle White Pigs to be entered or eligible for entry in the Herd-Book of the National Pig-Breeders' Association)

President's Medal for best Middle White Pig

[1] **Gold Medal**, value £5, for the best Middle White Pig in the Show.

ENTRY FEES		CLASS		PREMIUMS		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
15/-	25/-	161	**Boar**, any age	8	4	2
15/-	25/-	162	**Boar** born in 1926	6	3	1
15/-	25/-	163	**Sow** born before 1925	8	4	2
15/-	25/-	164	**Sow** born in 1925	8	4	2
15/-	25/-	165	**Sow** born in 1926	6	3	1

PRIZE MONEY BY SOCIETY . . £56
[1] CONTRIBUTED PRIZES . . 6

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* See Rule 35.

[1] Given by the National Pig-Breeders' Association.

ENTRY FEES		CLASS		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
			PIGS	£	£	£
			LARGE BLACK			
			Judge: G. A. Goodchild			
			President's Medal for best Large Black Pig			
			[1] **Silver Medal** for the best Large Black Boar.			
15/-	25/-	166	**Boar** born before 1925	8	4	2
15/-	25/-	167	**Boar** born in 1925	8	4	2
15/-	25/-	168	**Boar** born in 1926	6	3	1
			[1] **Silver Medal** for the best Large Black Sow.			
15/-	25/-	169	**Sow** born before 1925	8	4	2
15/-	25/-	170	**Sow** born in 1925	8	4	2
15/-	25/-	171	**Sow** born in 1926	6	3	1
			PRIZE MONEY BY SOCIETY . £51			
			[1] CONTRIBUTED PRIZES . . 25			
			CUMBERLAND			
			Judge: Peter Duncan			
			President's Medal for best Cumberland Pig			
15/-	25/-	172	**Boar**, any age	8	4	2
15/-	25/-	173	**Boar** born in 1926	6	3	1
15/-	25/-	174	**Sow**, any age	8	4	2
15/-	25/-	175	**Sow** born in 1926	6	3	1
			PRIZE MONEY BY SOCIETY . . £28			
			[2] CONTRIBUTED PRIZES . . 20			
			LARGE WHITE ULSTER			
			Judge: Kenneth MacRae			
			President's Medal for best Large White Ulster Pig			
15/-	25/-	176	**Boar** born before 1st September 1925	8	4	2
15/-	25/-	177	**Boar** born on or after 1st September 1925	6	3	1
15/-	25/-	178	**Sow** born before 1st September 1925	8	4	2
15/-	25/-	179	**Sow** born on or after 1st September 1925	6	3	1
			PRIZE MONEY BY SOCIETY . . £28			
			[3] CONTRIBUTED PRIZES . . 20			
			PRIZE MONEY BY SOCIETY . . £239 0			
			CONTRIBUTED . . 71 0			
			CUPS, MEDALS, &c. . . 10 0			
			Total Prizes for Pigs . . £320 0			

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[1] Given by Large Black Pig Society. [2] Given by the Cumberland Pig-Breeders' Association.
[3] Given by the Large White Ulster Pig Society.

EXTRA STOCK

(FORMER WINNERS AND STOCK NOT ELIGIBLE FOR ORDINARY CLASSES).

Animals not included in the Classes for Competition may be exhibited as Extra Stock, and may receive Awards as follows: the Silver Medal, the Medium Silver Medal, and the Bronze Medal.

Animals entered as Extra Stock are eligible to compete for the President's Medals, whether former winners of these Medals or not. They are also eligible to compete for Special Prizes where the conditions of these Prizes permit.

While every endeavour will be made to see that former winners are correctly entered in the Catalogue as "Extra Stock," the Society accepts no responsibility for this, it being the duty of Exhibitors to state clearly on the Entry Form the Show at which the animal became disqualified for the Ordinary Classes. If an animal appears in the Catalogue as entered in an Ordinary Class which should appear as "Extra Stock," it cannot thereafter be transferred to the "Extra Stock" Section.

Entry Fees—same as corresponding Classes.

*POULTRY

Judges: Charles Brown, Classes 1 to 20, 57 to 68, and 85 to 92; John Robertson, Classes 21 to 56; George White, Classes 69 to 84; A. H. Fox-Brockbank, Classes 93 to 115.

[1] **Champion Challenge Bowl,** value £50, for the best exhibit in the Poultry Classes.

First Premium—ONE SOVEREIGN; *Second Premium*—TEN SHILLINGS. In each Class in which there are four or more entries a Third Prize of Five Shillings may be awarded, provided there is sufficient merit in the pens. In addition to the Premiums, the Judges may award *one* Very Highly Commended, *one* Highly Commended, and as many Commended tickets in each class as they consider justified by the number and merit of the entries.

Champion Medals are offered as follows:—

1. Best Cock, any Variety.
2. Best Hen, any Variety.
3. Best Cockerel, any Variety.
4. Best Pullet, any Variety.
5. Best Waterfowl.
6. Best Turkey.

Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Entry Fees—Members, 2s. 6d.; Non-Members, 4s.

LEGHORN—	Class
White	1. Cock
	2. Hen
	3. Cockerel
	4. Pullet
Any other Colour	5. Cock
	6. Hen
	7. Cockerel
	8. Pullet
MINORCA	9. Cock
	10. Hen
	11. Cockerel
	12. Pullet
HAMBURGH	13. Cock
	14. Hen
	15. Cockerel
	16. Pullet
SCOTCH GREY	17. Cock
	18. Hen
	19. Cockerel
	20. Pullet
PLYMOUTH ROCK—	
Barred	21. Cock
	22. Hen
	23. Cockerel
	24. Pullet
Any other Colour	25. Cock or Cockerel
	26. Hen or Pullet
ORPINGTON—	
Black	27. Cock
	28. Hen
Any other Colour	29. Cock
	30. Hen
Any Colour	31. Cockerel
	32. Pullet
WYANDOTTE—	
Gold or Silver	33. Cock
	34. Hen
	35. Cockerel
	36. Pullet

WYANDOTTE—*continued*	Class
White	37. Cock
	38. Hen
	39. Cockerel
	40. Pullet
Partridge	41. Cock or Cockerel
	42. Hen or Pullet
Any other Colour	43. Cock or Cockerel
	44. Hen or Pullet
RHODE ISLAND RED	45. Cock
	46. Hen
	47. Cockerel
	48. Pullet
SUSSEX—	
Light	49. Cock
	50. Hen
	51. Cockerel
	52. Pullet
Any other Variety	53. Cock
	54. Hen
	55. Cockerel
	56. Pullet
DORKING—	
Coloured	57. Cock
	58. Hen
	59. Cockerel
	60. Pullet
Silver Grey	61. Cock
	62. Hen
	63. Cockerel
	64. Pullet
SCOTS DUMPY	65. Cock
	66. Hen
	67. Cockerel
	68. Pullet
INDIAN GAME	69. Cock
	70. Hen

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[1] Given by the Proprietors of 'The Scottish Poultry News,' Aberdeen. The Bowl will become the property of the exhibitor who shall win it three times, not necessarily in succession. A Silver Medal will be awarded to the winner each year.

Special Entry Forms for Poultry Classes.

* See Regulations 66 and 67.

	Class	
INDIAN GAME—*continued*	71.	Cockerel
	72.	Pullet
OLD ENGLISH GAME	73.	Cock
	74.	Hen
	75.	Cockerel
	76.	Pullet
BANTAM—		
Game—Old English	77.	Cock
	78.	Hen
Game—Modern	79.	Cock
	80.	Hen
Other than Game	81.	Cock
	82.	Hen
Any Variety	83.	Cockerel
	84.	Pullet
Any other recognised Breed	85.	Cock
	86.	Hen
	87.	Cockerel
	88.	Pullet
PURE BRED FOWLS FOR LAYING PURPOSES—		
Any heavy breed	89.	Hen or Pullet
Any light breed	90.	Hen or Pullet
CROSS-BRED FOWLS FOR LAYING PURPOSES	91.	Hen
	92.	Pullet
DUCKS—		
Aylesbury	93.	Drake
	94.	Duck

	Class	
DUCKS—*continued*		
Aylesbury	95.	Drake (young)
	96.	Duck (young)
Orpington	97.	Drake
	98.	Duck
	99.	Drake (young)
	100.	Duck (young)
Indian Runner	101.	Drake
	102.	Duck
Any other Variety	103.	Drake
	104.	Duck
GEESE	105.	Gander
	106.	Goose
TURKEYS	107.	Cock
	108.	Hen
TABLE POULTRY—		
(*a*) TABLE FOWLS—		
Any pure Breed	109.	Cockerel
	110.	Pair of Pullets
Game-Cross	111.	Cockerel
	112.	Pair of Pullets
Any other Cross	113.	Cockerel
	114.	Pair of Pullets
(*b*) DUCKLINGS FOR TABLE PURPOSES—		
Any Breed or Cross	115.	Pair of Ducklings

AMOUNT OF POULTRY PREMIUMS, £201, 5s.

Special Entry Forms for Poultry Classes.

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* FUR-PRODUCING RABBITS

Judge : Mrs Chavasse.

First Premium—FIFTEEN SHILLINGS; *Second Premium*—TEN SHILLINGS; *Third Premium*—FIVE SHILLINGS. In each Class in which there are less than four entries the Third Prize of Five Shillings will not be awarded. In addition to the Premiums, the Judges may award *one* Very Highly Commended, *one* Highly Commended, and as many Commended tickets in each Class as they consider justified by the number and merit of the entries.

Class.

1. Blue Beveren, Buck.
2. Blue Beveren, Doe.
3. Blue Beveren, Buck or Doe, under 5 months at first day of Show.
4. Chinchilla, Buck.
5. Chinchilla, Doe.
6. Chinchilla, Buck or Doe, under 5 months at first day of Show.
7. Havana, Buck or Doe.
8. Lilac, Buck or Doe.
9. Angora, Buck or Doe.
10. Any other variety of Fur-producing Rabbit, Buck or Doe.

Entry Fee—2s. 6d. each rabbit.

PRIZE MONEY BY SOCIETY £15

Special Entry Forms for Rabbit Classes.

* See page 94.

HONEY, &c.

Judge: John Anderson, M.A., B.Sc.

OPEN CLASSES

Entry Fees—2s. 6d. each.

Class.		Premiums. 1st.	2nd.	3rd.
1.	Collection of Appliances suitable for a beginner's outfit for Bee-keeping. A card naming all the articles, along with the price at which they will be supplied for one year from date, to be fixed to the exhibit	20/-	15/-	10/-
2.	Best and most complete Frame Hive for general use, with any improvements. Unpainted	20/-	15/-	10/-
3.	Best and most complete Hive. Unpainted. Price not to exceed 35/-	20/-	15/-	10/-
4.	Six Sections of Comb Honey, excluding Heather Honey	20/-	15/-	10/-
5.	Six Sections of Heather Honey	20/-	15/-	10/-
6.	Six Jars of Run or Extracted Light-coloured Honey, approximate weight 6 lb.	20/-	15/-	10/-
7.	Six Jars of Run or Extracted Medium or Dark-coloured Honey, excluding Heather Honey, approximate weight 6 lb.	20/-	15/-	10/-
8.	Six Jars of pressed Heather Honey in liquid form, approximate weight 6 lb.	20/-	15/-	10/-
9.	Six Jars of Granulated Honey, approximate weight 6 lb.	20/-	15/-	10/-
10.	Two shallow Frames of Comb Honey for extracting purposes	20/-	15/-	10/-
11.	Products made with the aid of Honey. (Recipe to be attached, which will be treated as confidential)	20/-	15/-	10/-
12.	Best display of Honey in any form staged in space 3 feet by 3 feet, height from table not exceeding 4 feet. Weight of honey not to exceed 100 lb.	60/-	30/-	20/-
13.	Best display of Honey in any form staged in space 3 feet by 3 feet, height from table not exceeding 4 feet. Weight of honey not to exceed 40 lb.	60/-	30/-	20/-
14.	Best exhibit of not less than 1 lb. of Wax in any form	20/-	15/-	10/
15.	Best exhibit of not less than 1 lb. of Wax made into shapes for retail trade and over-counter trade. Convenience in packing to be taken into consideration	20/-	15/-	10/-
16.	Observatory Hive with Queen and Bees	50/-	30/-	15/-

(Confined to Scottish Exhibitors.)

Class.		1st.	2nd.	3rd.
17.	One Standard Frame of Comb Honey for extracting purposes	20/-	15/-	10/-
18.	Six Sections of Comb Honey, excluding Heather Honey	20/-	15/-	10/-
19.	Six Sections of Heather Honey	30/-	20/-	10/-
20.	Six Jars of Run or Extracted Medium or Dark-coloured Honey, excluding Heather Honey, approximate weight 6 lb.	30/-	20/-	10/-
21.	Six Jars of Run or Extracted Light-coloured Honey, approximate weight 6 lb.	30/-	20/-	10/-

Silver and Bronze Medals will be awarded by the Scottish Bee-Keepers' Association to the First and Second winners of the greatest number of points in Classes 4-21, calculated on the following basis: 1st prize, 3 points; 2nd prize, 2 points; 3rd prize, 1 point.

Championship Cup, value £5, 5s.—This cup has been gifted by the Rev. John Beveridge, M.B.E., B.D., Gartmore, and will be held for one year by the winner of the Silver Medal, ultimately becoming the property of the first competitor to score 100 points.

PRIZE MONEY BY SOCIETY	£48, 0s. 0d.
CONTRIBUTED BY SCOTTISH BEE-KEEPERS' ASSOCIATION	£10, 10s. 0d.
CHAMPIONSHIP CUP	£5, 5s. 0d.

Special Entry Forms for Appliances and Honey.

Should there be in any class three or less than three entries, the value of the first prize will be reduced to that of the second, the second to that of the third, and no third prize will be awarded.

RULES AND REGULATIONS.

1. All exhibits must be despatched in time to be delivered at the Showyard not later than 6 P.M. on Monday, 28th June. According to railway regulations, exhibitors will require to pay return carriage and cartage when despatching. Return carriage-paid labels will be supplied by the Secretary, and must be addressed for the return journey, and have numbers of Classes on same. Non-compliance with this regulation will mean that the exhibit will be left in the Showyard. Boxes containing hives, jars, or sections must be *screwed* and not nailed, and the hives, bottles, and sections so placed that they can be lifted out and replaced without disturbing the packing.

2. The number of the exhibit will be sent by the Secretary (as entered on the card), and must be placed on every exhibit and on each detachable part of exhibit—viz., on every jar of Extracted Honey. The number must be gummed on the side of the jar at the foot and not on the bottom or cap. No goods will be allowed to be staged unless this rule is complied with.

3. No card, trade mark, or name of the exhibitor may be placed upon any part of an exhibit. Every article exhibited must be the property of the exhibitor, and all honey must have been gathered in the natural way within Great Britain, Northern Ireland, and Irish Free State, by bees the property of the exhibitor.

4. Comb Honey must be glazed on both sides, to protect the honey from injury. If paper edging is used, it must be of such a width as to leave 3¼ inches by 3¼ inches of glass clear of the lace paper, or in any other neat way capable of easy removal by the Judges, in small boxes glazed on both sides, such as supplied by dealers.

5. All Run, Extracted, and Granulated Honey must be shown in the usual mercantile Glass Jars holding approximately 1 lb., except in Classes 12 and 13.

6. No exhibitor shall be allowed to take more than one prize in any one class.

7. The Judge shall be empowered to withhold prizes in case of insufficient merit.

8. Should there be in any class three or less than three entries, the value of the first prize will be reduced to that of the second, the second to that of the third, and no third prize will be awarded.

9. The Judge will commence his inspection at 10 a.m. on Tuesday, and the Bee Shed will be closed to the public during the judging.

10. Exhibits of Honey may be placed in their positions in the shed before the opening and removed at the close of the Show by exhibitors themselves or their representatives. In the event of neither the exhibitor nor a person with written authority from the exhibitor being present to place or remove the exhibits, they will be placed and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of the exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. In the case of exhibits which are not removed by 5.30 p.m. on the closing day of the Show, the Society will hold itself at liberty to hand them over to the railway companies for despatch to the respective exhibitors.

11. No lot can be removed from the yard till 5 p.m. on Friday, the last day of the Show.

12. The Society undertakes no responsibility for the receipt or despatch of exhibits, nor for any injury exhibits may sustain during the Show or otherwise.

13. **Railway delivery charges from station to Showyard and back to be paid by exhibitor. See pp. 93 and 94.**

* DAIRY PRODUCE

Judge : R. J. Drummond

No Exhibitor to show more than **one lot** in any Class

Entry Fees—Members, 5s.; Non-Members, 7s. 6d.

Class	Premiums. 1st. £	2nd. £	3rd. £	
1. Powdered Butter, not less than 3 lb.	4	2	1	
2. Fresh Butter, three 1-lb. rolls	4	2	1	
				£14
3. Cheddar Cheese, 56 lb. and upwards—£6, £4, £2, £1				13
4. Sweet-Milk Cheese, flat shape, white in colour, from a dairy where all cheese is made according to the Dunlop method—£4, £2, £1				7
5. Cheese, 14 lb. and under—£3, £2, £1				6
				£40

Special Entry Forms for Dairy Produce.

* See Regulations 75 and 76.

Railway delivery charges from station to Showyard and back to be paid by exhibitor. See pp. 93 and 94.

WOOL

Judge: Herbert C. Redman

THREE *Fleeces in each Entry. Each fleece must be shown entire. Entry Fee, 5s.*

PURE BREED CLASSES

Class		Premiums. 1st.	Premiums. 2nd.	Premiums. 3rd.
	*BLACKFACE.	£	£	£
1. *Ewe*		3	2	1
2. *Wedder*		3	2	1
3. *Hogg*		3	2	1
	CHEVIOT.			
4. *Ewe*		3	2	1
5. *Hogg*		3	2	1
	BORDER LEICESTER.			
6. *Ewe*		3	2	1
7. *Hogg*		3	2	1
	HALF-BRED.			
8. *Ewe*		3	2	1
9. *Hogg*		3	2	1
	†SHETLAND.			
10. *Ewe*		3	2	1
11. *Hogg*		3	2	1
				£66

TOTAL PRIZE MONEY FOR WOOL, £66.

Cheviot, Border Leicester, and Half-Bred Fleeces must be shown washed, and Blackface and Shetland Fleeces unwashed. All Fleeces must be shorn in the year of the Show from sheep bred and reared on, or regular stock of, the exhibitor's farm.

Railway delivery charges to and from Showyard must be paid by the exhibitor.

Special Entry Forms for Wool Classes.

* Blackface Ewe Fleeces shall be not less than 4½ lb., and Wedder and Hogg Fleeces not less than 6 lb. in weight.

† An exhibit of Shetland Wool may comprise fleeces of one or more colours, but each fleece must be self-coloured.

Railway delivery charges from station to Showyard and back to be paid by exhibitor. See pp. 93 and 94.

RURAL INDUSTRIES

Judges: Miss Bruce, Classes 1, 2, 3, 4, 5, 6, 15, 16, 20, and 22; Miss A. Knox Arthur and Miss Blair, Classes 8, 9, 10, 11, 13, 14, 19, 23, 24, 25, 26, and 27; Mrs K. Granger Heiton, Class 12; Mr J. Mountford, Classes 7, 21, 28, and 29; Mr J. R. C. Smith, Classes 17 and 18.

Entry Fees, 2s. 6d. each article.

OPEN CLASSES.

Class.		Premiums. 1st.	 2nd.	 3rd.
	SHETLAND KNITTING.			
1.	Fine Lace Goods (separate entry for each article)	£3	£2	£1
2.	Jumper, Sports Coat, or Dress—one or more colours	3	2	1
3.	Jumper or Sports Coat—all over Fair Isle	3	2	1
4.	Other Exhibits (separate entry for each article)	2	1	10/-
	TWEEDS.			
5.	Harris or other Tweed—Hand-spun, Hand-woven, and Vegetable-dyed	3	2	1
6.	Tweed—Mill-spun, Hand-woven	3	2	1
	MISCELLANEOUS.			
7.	Home-made Rug (wool)	3	2	1
8.	Embroidery—white (to be exhibited unwashed)	3	2	1
9.	„ coloured	3	2	1
10.	Leather Gloves	2	1	10/-
11.	Specimen of Leather Work other than Gloves	2	1	10/-
12.	„ Furcraft	2	1	10/-
13.	„ Hand-painted Pottery	2	1	10/-
14.	„ Basket Work (Rafia not eligible)	2	1	10/-
15.	Best collection of Vegetable-dyed Wools	2	1	10/-
16.	Home-spun Yarn—2-3 cuts	2	1	10/-
17.	Shepherd's Crook—Hand-made	25/-	15/-	10/-
18.	Walking Stick—Hand-made	25/-	15/-	10/-

£81 0

CONFINED CLASSES.

Open to Institutes and Members of Institutes in the whole of Scotland.

		Premiums. 1st.	 2nd.	 3rd.
19.	Chamois Gloves	£3	£2	£1
20.	Specimen of Filet-lace	3	2	1

£12 0

Confined to Institutes and Members of Institutes in the South-Eastern Area of Scottish Women's Rural Institutes.

		Premiums. 1st.	 2nd.	 3rd.
21.	Rug—made from old material	20/-	10/-	5/-
22.	Socks—4-ply fingering	10/-	6/-	4/-
23.	Man's Woollen Shirt—detachable Collar—(hand-sewn)	15/-	10/-	5/-
24.	Sisal Cord Mat	15/-	10/-	5/-

RURAL INDUSTRIES—*continued.*

		Premiums. 1st.	2nd.	3rd.	
25.	Leather Handbag	20/-	10/-	5/-	
26.	Coloured Embroidery—Woollen	15/-	10/-	5/-	
27.	" " Needle-weaving	15/-	10/-	5/-	
28.	Wadded Quilt—home made	20/-	10/-	5/-	
29.	Woollen Quilt—home made	20/-	10/-	5/-	
30.	(*No Entry Fee*).—Special Prizes to the Institute winning the largest number of prizes in Classes 21 to 29 inclusive. First prize to count six points, Second Prize five points, Third Prize four points, V.H.C. three points, H.C. two points, and C. one point	£3	£2	£1	
					£20 0

PRIZE MONEY BY SOCIETY	£76 0
CONTRIBUTED BY DR T. G. NASMYTH, FOR CLASSES 17 AND 18	£5 0
CONTRIBUTED BY THE CENTRAL COUNCIL OF SCOTTISH WOMEN'S RURAL INSTITUTES FOR THE CONFINED CLASSES	£32 0

NOTE.—(*a*) No exhibit may be entered in more than one Class.
(*b*) An exhibit which has been awarded a First Prize at a Show of this Society cannot again be entered for competition in the same class.

REGULATIONS.

1. The Competition, except where otherwise stated, is open to competitors from all parts of Great Britain, Northern Ireland, and Irish Free State. Societies or Institutes, as well as individuals, shall be allowed to compete. An exhibit which has won a First Prize at a Show of this Society cannot again be entered for competition in the same class.

2. Every exhibit must be the work either of the Exhibitor or of a member of the exhibiting Society or Institute.

3. An entry fee of 2s. 6d. for each exhibit is payable at the time of entry.

4. Exhibits will be received in the Showyard not later than 8 P.M. on Monday, the day before the opening of the Show. Judging will commence at 9.30 A.M. on Tuesday. The section will be closed to the public during the judging. Exhibits shall not be removed till after the close of the Show.

5. Exhibits shall be entirely at the risk of exhibitors, who shall be solely responsible for delivery and removal of their own exhibits. In the event of neither the exhibitor nor a person with written authority from the exhibitor being present to place or remove exhibits, these will be placed and removed by men hired and paid by the Society; but this will be done on the understanding that the men are hired to do the work on behalf of the exhibitors and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits A receipt signed by the exhibitor, on a form to be issued by the Secretary, must be delivered before any exhibit is handed over to the exhibitor or his or her representative.

6. Exhibitors shall be allowed to place with their exhibits a notice indicating where (in the Showyard or elsewhere) similar articles may be purchased.

7. Exhibits must not be sent to the Society's Office previous to date of Show. Labels, &c., will be posted to Exhibitors about fourteen days prior to the Show.

8. **Railway delivery charges from station to Showyard and back to be paid by exhibitor. See pp. 93 and 94.**

Special Entry Forms for Rural Industries Section.

HORSE SHOEING

Judges: Alexander B. Tully, V.S., William French, Edward Martin (sen.).

Open to Shoeing-Smiths from any part of Great Britain, Northern Ireland, and Irish Free State.

Horses provided for this Competition cannot be entered in any other Class.

THURSDAY, 1ST JULY.

Class 1.—FARM HORSES (Open Class).

1st Prize, £5 and Clock.*
2nd Prize, £5 and Canteen of Cutlery.†
3rd Prize, £5 and Gold Medal.‡
4th Prize, £4 and Gold Medal.§
5th Prize, £3.
6th Prize, £2.
7th Prize, £2.
8th Prize, £1.
9th Prize, £1.

FRIDAY, 2ND JULY.

Class 2.—FARM HORSES (Juniors under Twenty-three Years of Age).

1st Prize, £5 and Gold Watch.**
2nd Prize, £3 and Canteen of Cutlery.†
3rd Prize, £2 and Gold Medal.‡
4th Prize, £1.

* Clock given by the Scottish Iron and Steel Co., Ltd., to the winner of the First Prize in Class 1.

** Gold Watch given by Messrs William Martin, Sons, & Co., to the winner of First Prize in Class 2.

† Canteen of Cutlery given by Messrs Neilson & Cleland, Coatbridge, to the winner of Second Prize in each Class.

‡ Gold Medal given by the Mustad Nail Company to the winner of Third Prize in each Class.

§ Gold Medal given by Capewell Nail Company to the winner of the Fourth Prize in Class 1.

PRIZE MONEY BY SOCIETY	£24
CLOCK AND £10 BY THE SCOTTISH IRON & STEEL CO., LTD., GLASGOW	£15
GOLD WATCH AND £5 BY MESSRS WILLIAM MARTIN, SONS, & CO., COATBRIDGE	£10
CUTLERY BY MESSRS NEILSON & CLELAND, LTD., COATBRIDGE	£8
GOLD MEDALS BY MUSTAD NAIL CO.	£4
GOLD MEDAL BY CAPEWELL NAIL CO.	£2

1. Entries must be made with the Secretary not later than 6th May. Entry Fee, 2s. 6d. for each Class. Entry Forms may be had on application.

2. The Competition will take place in the Showyard, and will be decided by points, time being taken into consideration. Each Competitor must make and fix one fore and one hind shoe, having previously taken off the old shoes. The shoes must be fullered, with low calkins, and with toe-pieces on hind shoes only. The use of files and wire brushes is not permitted. Each Competitor must bring his own tools, nails, and a striker. The striker will not be allowed to touch the horse's hoof. The local Blacksmiths' and Farriers' Association will provide forges and anvils. The horses to be shod will be provided by the Association. Forges and horses will be balloted for.

3. Any Competitor who does not attend at the Horse-Shoeing Stance, and answer to his name at 9.30 A.M. on the day on which he is entered for competition, will be debarred from competing.

4. The Competitor and his striker will be admitted to the Yard free of charge on the day of Competition on presentation of tickets which will be sent to the Competitor for the purpose.

The Waverley horse-shoe iron to be used in the Open Class, and the Dundyvan horse-shoe iron to be used in the Junior Class, will be supplied by Messrs Neilson & Cleland, Ltd., Coatbridge.

Special Entry Forms for Horse-Shoeing Classes.

ABSTRACT OF PREMIUMS.

Given by the Society.

Cattle	£1167	0	0
Horses	912	10	0
Jumping Competitions	147	0	0
Sheep	572	0	0
Goats	30	0	0
Pigs	239	0	0
Poultry	201	5	0
Fur-Producing Rabbits	15	0	0
Bee Appliances and Honey	48	0	0
Dairy Produce	40	0	0
Wool	66	0	0
Rural Industries	76	0	0
Horse Shoeing	24	0	0
Medals to Breeders, &c.	20	0	0
Prizes for Timber[1]	40	0	0
	£3597	15	0

Contributed Prizes, Cups, &c.

His Grace The Duke of Roxburghe, K.T., M.V.O.—Champion Medals	31	0	0

CATTLE.

*The late Mr William Duthie, Collynie, Tarves	£150	0	0			
*Mr Emilio R. Casares, jun., London	50	0	0			
The Shorthorn Society, and 2 Medals	40	0	0			
Scottish Shorthorn Breeders' Associations	20	0	0			
*The late Sir George Macpherson Grant, Bart.	50	0	0			
*The late Sir John Macpherson Grant, Bart.	50	0	0			
Aberdeen-Angus Cattle Society	10	0	0			
*Galloway Cattle Society	50	0	0			
The Dun and Belted Galloway Cattle-Breeders' Association	20	0	0			
*Mrs Brown, Kirkbrex, Glasgow—Knockbrex Challenge Cup	50	0	0			
*Highland Cattle Society of Scotland	89	5	0			
*Cowhill Champion Cup	30	0	0			
Ayrshire Cattle Herd-Book Society	20	0	0			
British Friesian Cattle Society	64	0	0			
*Lady Rachel Workman MacRobert—Champion Bell	52	10	0			
*Lt.-Colonel Charles Brook—Kinmount Challenge Cup	50	0	0			
Red Poll Cattle Society	25	0	0			
Sir Robert Usher and Lady Usher	10	0	0			
Lady Kinloch	5	0	0			
Dexter Cattle Society	5	0	0			
				840	15	0

HORSES.

*Cawdor Challenge Cup for Clydesdale Stallions	£52	10	0			
*Cawdor Challenge Cup for Clydesdale Mares and Fillies	52	10	0			
"William Taylor" Memorial Committee	10	0	0			
*Paisley Perpetual Gold Challenge Cup	300	0	0			
Hunters' Improvement and National Light Horse Breeding Society	10	0	0			
Duke of Buccleuch's Hunt	52	10	0			
Colonel Charles Hope	20	0	0			
Board of Agriculture for Scotland	40	0	0			
National Pony Society	10	0	0			
The Highland Pony Society	10	0	0			
A past President of the Shetland Pony Stud-Book Society	10	0	0			
"Four Lovers of the Breed" (Shetland Ponies)	10	0	0			
Shetland Pony Stud-Book Society (Medal).						
*Glasgow Challenge Cup	50	0	0			
				627	10	0
Carry forward				£5097	0	0

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[1] Grant to Royal Scottish Arboricultural Society for Prizes for Timber.

* Challenge Prizes.

ABSTRACT OF PREMIUMS—*continued*

Brought forward				£5097	0	0

SHEEP.

His Grace The Duke of Roxburghe, K.T., M.V.O.—4 Gold Medals	£25	0	0			
*Fife and Kinross Perpetual Gold Challenge Cup	200	0	0			
*Cheviot Sheep Society—Borthwick Challenge Cup	25	0	0			
Tweeddale Gold Medal	25	0	0			
Society of Border Leicester Sheep-Breeders	20	0	0			
*Renfrewshire Perpetual Gold Challenge Cup	250	0	0			
*Challenge Bowl for Oxford-Down Sheep	50	0	0			
Oxford-Down Sheep-Breeders' Association	21	0	0			
Suffolk Sheep Society	25	0	0			
				641	0	0

GOATS.

Board of Agriculture for Scotland	£12	0	0			
*Lord Dewar	21	0	0			
*Mrs S. Macdonald, Garrochty	10	0	0			
				43	0	0

PIGS.

National Pig-Breeders' Association	£16	0	0			
Large Black Pig Society and 2 Medals	25	0	0			
Cumberland Pig-Breeders' Association	20	0	0			
Large White Ulster Pig Society	20	0	0			
				81	0	0

POULTRY.

*Proprietors of 'The Scottish Poultry News,' Aberdeen				50	0	0

HONEY.

The Scottish Bee-Keepers' Association	£10	10	0			
*Rev. John Beveridge, M.B.E., Championship Cup	5	5	0			
				15	15	0

RURAL INDUSTRIES.

Central Council of Scottish Women's Rural Institutes	£32	0	0			
Dr T. G. Nasmyth	5	0	0			
				37	0	0

HORSE SHOEING.

The Scottish Iron & Steel Co., Ltd., Glasgow (Clock and £10)	£15	0	0			
Messrs W. Martin, Sons, & Co., Coatbridge (Gold Watch and £5)	£10	0	0			
Messrs Neilson & Cleland, Limited, Coatbridge (Cutlery)	8	0	0			
Mustad Nail Co. (2 Gold Medals)	4	0	0			
Capewell Nail Co. (Gold Medal)	2	0	0			
				39	0	0
				£6003	15	0

* Challenge Prizes.

JOHN STIRTON, *Secretary.*

3 George IV. Bridge,
Edinburgh, *March* 1926.

SILVER MEDALS FOR NEW OR IMPROVED IMPLEMENTS.

See Regulations on page 90.

FORESTRY EXHIBITION.

For information as to above, apply to the Secretary, Royal Scottish Arboricultural Society, 8 Rutland Square, Edinburgh.

WOOL DEMONSTRATIONS.

Arrangements are being made for Demonstrations on Wool, to be held in the Wool Shed on Wednesday, Thursday, and Friday, 30th June, 1st and 2nd July.

The Society's Show for 1927 will be held at Edinburgh.

MEMBERS ADMITTED SINCE THE LIST WAS PUBLISHED IN MARCH 1925.

ARRANGED ACCORDING TO SHOW DISTRICTS.

(Elected 3rd June 1925 and 6th January 1926.)

1.—GLASGOW DIVISION

ARGYLL

Admitted

1926 Anderson, John Douglas, Torrans, Pennyghael, Isle of Mull
1925 Campbell, Archibald, Duchran, Carradale
1925 Campbell, Major Bruce A., Yr. of Arduaine, Innisaeg, Ardfern, by Lochgilphead
1925 Campbell, Donald, Post Office, Carradale
1925 Campbell, Keith, Auchenbreck, Carradale, Kintyre
1925 Campbell, Peter J., Estates Office, Campbeltown
1925 Carmichael, Robert, Taynuilt Hotel, Taynuilt
1925 Hall, Mrs J. Macalister, Killean, Tayinloan
1925 Lithgow, James, of Ormsary, Ardrishaig
1925 M'Neill, Donald, South Hall Home Farm, Colintraive
1925 Macpherson, Alexander, Lephincorrach Farm, Torrisdale, Carradale
1925 Thomson, Arthur L., Estate Office, Isle of Coll

AYR

1925 Adams, Andrew, Trinity Manse, Saltcoats
1925 Anderson, James, Kirkhall, Ardrossan
1925 Anderson, James B., Main Street, Sorn, Mauchline
1926 Beck, William, Knockrivoch, Saltcoats
1926 Brown, Robert, 5 John Dickie Street, Kilmarnock
1925 Campbell, John, Auchengarth Farm, Skelmorlie
1925 Carruthers, David, jun., 18 Duke Street, Kilmarnock
1925 Craig, James, Birdiehouse Farm, Beith
1925 Donald, Thomas, Fardale Hill, Kilmarnock
1925 Douglas, James R., of Changue, Barr
1926 Douglas, William, Drumburle, Dailly
1925 Eadie, Miss Deborah H. L., Hazelbank Farm, Dunlop
1925 Findlay, Thomas, Rench, Darvel
1925 Gilchrist, George F., C.A., Skelmorlie House, Skelmorlie
1925 Gray, David Inglis Wood, Alticane, Pinwherry
1926 Gray, David, Lochlea, Craigie
1926 Hannah, George Adam, Girvan Mains, Girvan
1926 Highet, John J. J., 43 Alloway Street, Ayr
1925 Hunter, James B., Strandhead Farm, Tarbolton
1925 Hunter, Robert D., Knocklandside, Kilmarnock
1925 Jamieson, Mungo L., Langholm Farm, Ochiltree
1926 Kirkwood, James, N.D.A., The Dairy School, Kilmarnock
1926 Lamont, John, Stevenston Road, Kilwinning
1925 M'Leod, R. U., Overton House, West Kilbride
1925 M'Pherson, R., Drumboy, Darvel
1925 M'Whirter, Robert, Linfairn, Straiton
1925 Marr, Andrew, Blackbyres Farm, Maybole
1925 Marr, John, jun., Frindlesshead Farm, Mauchline
1925 Steel, James P., Stonecalsey, Kilmarnock
1925 Stevenson, Allan, Sorbie Farm, Saltcoats
1925 Taylor, A., Crosbie, West Kilbride
1925 Templeton, William, Mosside, Darvel
1925 Wallace, William, Lyonston, Maybole
1925 Walls, David, South Dean Road, Kilmarnock
1925 Wardrop, William D., Rigg Farm, Auchinleck
1925 Wilson, James, Meadowbank Farm, Mauchline
1925 Wilson, Matthew C., Riccarton Mills, Hurlford
1926 Wilson, Mrs J. H., Chamowni, Troon
1925 Young, James, East Wardlaw, Kilmarnock

BUTE

1925 Barbour, Jack, Ballikelet Farm, Millport
1926 Johnston, John, Glenscorrodale, Lamlash, Isle of Arran
1925 M'Allister, Dugald, Secretary, Bute Agricultural Society, Bank of Scotland, Ltd., Rothesay

LANARK

1925 Aitken, James G., 67 Hope Street, Glasgow
1925 Aitken, William H., 67 Hope Street, Glasgow
1925 Allardice, John, Yett Farm, Newarthill, Motherwell
1925 Anderson, John, Northcote, 8 Central Avenue, Cambuslang
1925 Austin, James, 105 St Vincent Street, Glasgow
1926 Ballantyne, John, Blairtum, Burnside, Rutherglen
1925 Bannatyne, John, Springhill, Douglas
1925 Barrie, James, Solicitor, Strathaven
1925 Bell, James, Auchengray, Carnwath
1925 Bennett, A. F., 1 Robertson Street, Glasgow
1925 Booth, Arthur, J.P., Woodlands, 52 Partickhill Road, Glasgow, W.
1926 Bruce, Walter Scott, 119 Bath Street, Glasgow
1925 Burns, James, 67 Hope Street, Glasgow
1925 Caesar, John C., Landelvine, 50 Monreith Road, Newlands, Glasgow
1925 Calder, Ramsay K., 144 St Vincent Street, Glasgow
1925 Campbell, Donald, M.R.C.V.S., Rutherglen, Glasgow
1925 Campbell, James, Croftfoot, Rutherglen
1925 Campbell, Robert, Burnbank, Strathaven
1925 Campbell, Thomas C., Woodside Farm, Rutherglen
1925 Cassels, J. F. Gordon, 67 Hope Street, Glasgow
1925 Chapman, James, Johnston Farm, Glenboig
1925 Chapman, Robert, Johnston Farm, Glenboig
1925 Clark, Alexander C., Avenue End, Millerston, Glasgow
1925 Cook, John, Westlinbank, Strathaven
1925 Craig, John, Holms, Strathaven
1925 Craig, John, Overdalserf, Netherburn
1926 Crawford, John Munro, 90 Clarence Drive, Hyndland, Glasgow
1926 Dallas, John, 1 Redlands Terrace, Glasgow
1925 Dick, James, Mid Auchengray, Carnwath
1925 Dick, William, Ashmore, Hamilton
1926 Dickie, Mrs Robert, 9 Grosvenor Crescent, Glasgow
1925 Donald, William F., Hareshaw, Strathaven
1925 Dunlop, James, 129 Surrey Lane, Glasgow
1925 Dunlop, William, C.A., 188 St Vincent Street, Glasgow
1925 Fairie, John, Littlegill, Auchenheath
1925 Farquhar, John, 67 Hope Street, Glasgow
1925 Ferguson, C. E., 144 St Vincent Street, Glasgow
1925 Findlay, John, Drumclog, Strathaven
1925 Findlay, Thomas A., High Drumclog, Strathaven
1925 Fleming, James, Borland, Lesmahagow
1925 Fleming, R., Windlaw Farm, Carmunnock
1925 Fleming, Thomas, Auchenheath Farm, Auchenheath
1925 Fletcher, Donald C., 5 Kirklee Gardens, Kelvinside, Glasgow
1925 Ford, James, 19 Hope Street, Glasgow
1925 Forrest, William, Castlehill, Carluke
1925 Fowlie, James H., Mossesfield, Springburn, Glasgow
1925 Fowlie, William, Mossesfield, Springburn, Glasgow
1925 Fraser, Samuel, 19 Hope Street, Glasgow
1925 Gammie, James, Ryding Estate Office, Airdrie
1925 Gemmell, R. K., 18 St Enoch Square, Glasgow
1926 Grant, Robert W., 16 Grantly Gardens, Shawlands, Glasgow
1926 HAMILTON, Lady, of Dalzell, Dalzell, Motherwell
1925 Hamilton, P. M., 25 Robertson Street, Glasgow
1925 Hamilton, Thomas, Hole Park, Cambuslang
1925 Hamilton, William, jun., Fairview, Kirkhill, Cambuslang
1925 Hill, William James, Writer, 19 St Vincent Place, Glasgow
1925 Hogg, Charles, 9 Royal Exchange Square, Glasgow
1925 Hogg, John, c/o Smith, Smith & Co., 104 West George Street, Glasgow
1925 Hunter, John, Hunterfield, Glassford
1925 Hutcheson, Gavin, Netherhouse, Bargeddie
1925 Jamieson, Robert, 24A Robertson Street, Glasgow
1925 Johnston, James, C.A., 190 West George Street, Glasgow
1925 Kedar, John, South Torfoot, Strathaven
1925 Kerr, John, 268 Mathieson Street, Glasgow, S.S.
1925 King, Professor L. A. L., West of Scotland Agricultural College, 6 Blythswood Square, Glasgow
1925 Kirkland, Andrew, Hallburn, Strathaven
1925 Laird, James, 70 Bath Street, Glasgow
1925 Lindsay, William, Eastfield, Pettinain, Thankerton
1925 Lohoar, Robert, Greenlees, Cambuslang
1925 M'Allister, Alexander, 11 Windsor Circus, Glasgow, W.
1925 M'Coll, Mrs George, 28 Balshagray Avenue, Partick, Glasgow
1925 M'Dougal, Allan, 57 Cochrane Street, Glasgow
1925 M'Gregor, John, 45 Hope Street, Glasgow
1925 Mackenzie, Roderick, 36 Buchanan Drive, Rutherglen
1925 M'Laren, William, 372 Crown Street, Glasgow
1925 M'Nab, John, 45 Hope Street, Glasgow
1926 MacNaughton, Finlay, Rogerfield, Baillieston
1925 MacPherson, John, Drumshangie, Airdrie
1925 M'Queen, James, 18 Greendyke Street, Glasgow, C. 1
1925 M'Queen, John, 18 Greendyke Street, Glasgow, C. 1
1925 M'Vey, James, 12 Roseby Terrace, Burnside
1925 Meason, William, 7 Cranbrooke Drive, Maryhill, Glasgow
1925 Meikle, Andrew, Todcastle, Strathaven
1925 Miller, John F. (Sloan, Munro, & Co., Ltd.), 19 Queen Street, Glasgow
1925 Mitchell, Alexander, C.A., 142 St Vincent Street, Glasgow
1925 Morrison, John B., 58 Waterloo Street, Glasgow
1925 Morrison, Mr, Avenue End, Millerston, Glasgow
1926 Morton, A. B. Fergus, 8 Blenheim Street, Springburn

1925 Morton, Robert, 67 Hope Street, Glasgow
1925 Mowat, James R., 6 Craigpark, Dennistoun, Glasgow
1925 Murdoch, Findlay F., East Hallside, Hallside, Glasgow
1925 Murdoch, James F., East Haughhead, Uddingston
1925 Murdoch, Robert, East Haughhead, Uddingston
1925 Neilson, George, Park, East Kilbride
1925 Neilson, Hugh, Park, East Kilbride
1925 Newbigging, T. Duncan, M.D., Kirkton of Crawford, Crawford
1926 Newlands, James, Black Bull Inn, Carluke
1925 Nisbet, A. F. R., M.A., B.Sc., &c., Agricultural College, Glasgow
1925 Orr, Peter, 67 Hope Street, Glasgow
1925 Park, James, Dechmont Farm, Cambuslang
1925 Park, John, Dechmont Farm, Cambuslang
1925 Park, John, 15 Cornwall Street, Glasgow
1925 Paterson, James, 106 Albert Road, Crosshill, Glasgow
1925 Pearson, Alex. S., 7 Northbank Terrace, Kelvinside North, Glasgow
1925 Pearson, J. A., 67 Hope Street, Glasgow
1925 Penrice, George, North Crookedstone, Quarter
1926 Pettigrew, James G. R., 82 St Vincent Street, Glasgow
1925 Prentice, James, Bogside, Carluke
1925 Prentice, John F., Belstane, Carluke
1925 Primrose, W. Ure, 98 Centre Street, Glasgow
1925 Riddell, Alexander, 10 Anderson Street, off Gallowgate, Glasgow
1925 Riddell, James H., 10 Anderson Street, off Gallowgate, Glasgow
1925 Robertson, A. B., Eastwood, Bothwell, Glasgow
1926 Robertson, Thomas, 180 Hope Street, Glasgow
1926 Rogerson, William, 82 St Vincent Street, Glasgow
1925 Ross, Charles, 1 Glenwood Gardens, Jordanhill, Glasgow
1925 Ross, Charles A., jun., 1 Glenwood Gardens, Jordanhill, Glasgow
1925 Ross, David, 60 Wellington Street, Glasgow
1925 Russell, A., 264 Crow Road, Broomhill, Glasgow
1925 Russell, D. T. (D. T. Russell & Baird, Ltd.), 78 Robertson Street, Glasgow
1925 Russell, E. A. S., 12 Kelburn Avenue, Dumbreck, Glasgow
1925 Russell, Thomas Allan Rigby, Cleghorn, Lanark
1925 Rutherford, A. C., 19 Hope Street, Glasgow
1925 Scott, Hugh, Midtown, Douglas
1925 Scott, Robert C., Greenhills, East Kilbride
1925 Sinclair, Robert, Crowhill, Coalburn
1926 Smith, Mrs M. A., Birkhill, Coalburn
1925 Smith, Robert J., 163 West George Street, Glasgow
1925 Speir, William, Newton Farm, Hallside, Glasgow
1925 Steven, James H., Cawdercuilt Farm, Maryhill, Glasgow
1926 Strang, Leslie Howie, 121 West George Street, Glasgow
1925 Struthers, Robert, South Halls, Strathaven
1925 Symington, Colonel Thomas, 27 Athole Gardens, Glasgow
1925 Symon, Andrew, 33 Cartvale Road, Langside, Glasgow
1925 Symon, Mrs A., 33 Cartvale Road, Langside, Glasgow
1925 Taylor, James F., M.R.C.V.S., Cathkin, Rutherglen
1925 Thompson, Miss Gladys, 28 Partickhill Road, Glasgow
1925 Todd, George, Broadlees, Chapelton
1925 Todd, Robert, Newark Farm, Glassford
1925 Turnbull, James, Daldowie Farm, Broomhouse, near Glasgow
1925 Twaddle, George, Castleton, Rutherglen
1925 Twaddle, William, Gilbertfield, Cambuslang
1925 Wannop, Isaac, Edina, Uddingston
1925 Warnock, David, Snabe, Strathaven
1926 Warnock, James, Foulyett Farm, Holytown
1925 Warnock, James, Woodhead, Chryston
1926 Watkins, William Gordon (Millar's Machinery Co., Ltd.), 95 Bothwell Street, Glasgow
1925 Watson, George, 67 Hope Street, Glasgow
1925 Watson, James, Hartside, Lamington
1925 Watson, William, Caldwellside, Lanark
1925 Whiteford, James, Rhindmuir Farm, Easterhouse
1925 Wilson, John, Writer, 81 St Vincent Street, Glasgow
1925 Wilson, Robert Martin, Agricultural Engineer, Threshold, Lanark
1926 Young, George, Calderwood, East Kilbride
1925 Young, Thomas, 1 Princes Square, Buchanan Street, Glasgow
1925 Younger, John E. ("Vivos," Ltd.), 139 Duke Street, Glasgow

RENFREW

1925 Adam, William, East Walkinshaw, Renfrew
1925 Andrew, William, Pannell Farm, Bridge of Weir
1926 Audsley, Frederic J., "Chellowdene," First Avenue, Netherlie, Glasgow
1925 Baird, John, Muirhead, Neilston
1925 Barr, John, Bogside Farm, Eaglesham
1925 Bowie, Alexander C., Nether Kirkton, Neilston
1925 Brown, Andrew, Greenlaw, Newton Mearns
1925 Brown, Charles Stuart, Auchengrange, Lochwinnoch
1925 Clark, Andrew, Barnaigh Farm, Lochwinnoch
1925 Clark, Andrew, East Mitchelton Farm, Lochwinnoch
1926 Clement, James, Inglestone, Newton Mearns
1925 Cowan, Malcolm, Nether Broadfield Farm, Howwood
1925 Crawford, John, Reivoch Farm, Howwood
1925 Crawford, John, Sproulston Farm, Howwood
1925 Falconer, Thomas F., Viewpark, Clarkston, near Glasgow
1925 Ferguson, William, West Knockbartnock, Lochwinnoch
1925 Garvie, Alexander, Plenploth, Newton Mearns

1926 Gibson, William Anderson, Dalfruin, Kilmacolm
1925 Gilmour, Andrew, Burnside, Newton Mearns
1925 Gilmour, B. W., 60 Albert Drive, Pollokshields, Glasgow
1925 Graham, James, Wellbank, Howwood
1925 Hill, James H., Greenock Grain Mills, Greenock
1925 Hirst, Major C. J., M.C., Houstonfield, Houston
1926 Holm, Captain Andrew Mackie, Dunavon, Giffnock
1925 Houston, R. C., Myrtle Bank, Howwood
1925 Houston, W. R., Contractor, Howwood
1925 Hunter, Mrs Margaret, St Brydes, Howwood
1926 Hunter, Thomas, Secretary and Treasurer, Renfrewshire Agricultural Society, 24 High Street, Paisley
1925 Jack, Robert W., Strathdee, 11 North Albert Road, Pollokshields
1925 Kerr, John, Thornleypark Farm, Paisley
1925 Kyle, Andrew, Crookston Farm, Cardonald
1925 Logan, Arthur, 12 Aytoun Road, Pollokshields
1925 Logan, Edmund D., 12 Aytoun Road, Pollokshields
1925 Love, James, Stripe Farm, Lochwinnoch
1925 M'Coll, Robert H., 21 Bruce Road, Pollokshields, Glasgow
1925 M'Gregor, Charles, Maxwell Drive, Pollokshields
1926 M'Gregor. William, jun., Bargarron Farm, Bishopton
1925 M'Kechnie, James, 44 Dalziel Drive, Pollokshields
1925 M'Kinlay, Peter, Treasurer, Agricultural Society, Lochwinnoch
1925 Maclachlan, Archibald, Moniabrock Farm, Kilbarchan
1925 M'Pherson, James, Shillingworth Farm, Bridge of Weir
1925 M'Whirter, J. Muir, Gibbleson Farm, Bridge of Weir
1925 Murray, J. L., Invercraig, Elderslie
1925 Parker, John P., Hall Farm, Lochwinnoch
1925 Patrick, John, Yardfoot Farm, Lochwinnoch
1925 Pickering, Miss Dorothy Jean, Falkland House, 56 Maxwell Drive, Pollokshields, Glasgow
1925 Robertson, C. S , Struan, Howwood
1925 Rowand, Robert, Candren Farm, Paisley
1925 Sanachan, John, Toll House, Howwood
1925 Shirras, George, 75 Kilmarnock Road, Giffnock
1925 Speirs, Mrs Hagart, Houston House, Renfrewshire
1925 Steel, Alexander, Barshagra, Barrhead
1925 Steel, Archibald, West Gleushinnock, Bishopton
1925 Steven, Henry, Konishead Farm, Thornliebank
1925 Stevenson, John, South Muirdykes Farm, Howwood
1925 Watson, A. C., 45 Causeyside Street, Paisley
1925 Wilson, John Syme, 83 Brisbane Street, Greenock
1925 Wilson, R., Manswrae Farm, Bridge of Weir
1925 Wilson, Robert, Thornleypark, Paisley
1925 Wilson, Thomas, Aboon the Brae, Neilston
1925 Wilson, William, 83 Brisbane Street, Greenock
1926 Wilson, William, Blackbyres, Barrhead

2.—PERTH DIVISION

FIFE

1926 Abbie, William, Annfield Farm, Largo
1925 Boyd, Daniel, Scotlandwell, by Leslie
1926 Burr, George, Farm Manager, Fife & Kinross Asylum Farm, Springfield, Cupar-Fife
1926 Campbell, Alexander C., Drummaird, Kennoway
1925 Dalziel, George, Blairsgreen Farm, Kinneddar, Oakley
1925 Errington, Captain Lancelot, St Ford, Elie
1926 Fair, George, Camilla Farm, Auchtertool, Kirkcaldy
1926 Honeyman, R. Wemyss, Westdean, Kirkcaldy
1926 Johnston, W. M., Foodie, Cupar-Fife
1926 M'Niven, William, Langraw Farm, St Andrews
1925 Nelson, Alexander, "Craigness," Boglily Road, Kirkcaldy
1926 Sharp, Russell, Hospital Mill House, Springfield
1926 Smith, Alexander, Garland Cottage, Cupar-Fife
1926 Smith, Alexander B., Ribbonfield, Crail
1926 Storrar, Thomas D., Manager, Pathhead and Sinclairtown Reform Co-operative Society, Ltd., 102 Commercial Street, Kirkcaldy
1925 Wardrop, James, 291 High Street, Kirkcaldy
1926 White, James, Pitcairn, Markinch

FORFAR

(Western District)

1925 Batchelor, Alexander, Craigie Home Farm, Dundee
1925 Findlay, Harry, of Myreton, Dundee
1925 Grant, John B., Westlands, Strathmartine, by Dundee
1926 Marr, James, West Happis, Inverarity, Forfar
1925 Morris, John, East Mylnefield Farm, Invergowrie
1925 Oram, William, Caldrum Street, Dundee
1926 Rea, David Grant, 44 Reform Street, Dundee

KINROSS

1925 Black, F. D. Belfrage, Tillywhaly, Milnathort
1925 Black, Stewart Belfrage, Tillywhaly, Milnathort
1926 Mitchell, Thomas, Farm Manager, Balado, Kinross

PERTH

(PERTH SHOW DISTRICT)

1926 Boddie, George Frederick, B.Sc., M.R.C.V.S., 177 High Street, Auchterarder
1926 Borland, George M., Kincardine Castle, Auchterarder
1926 Chalmers, Mrs E. M., Little Tullicbelton, Bankfoot
1925 Christie, David, 7 Kinloch Place, Blairgowrie
1926 Drummond, John, Broadleys, Dunning
1926 Gow, Norman F., 32 St John Street, Perth
1926 Hilton, J. Bruce, Viewfield, Longforgan
1926 Hunter, Mrs Isabel Agnes, Arngask, Glenfarg
1926 Lennox, Mrs Emily Jane, Redhills, Methven
1925 MacLaurin, H. Normand, Calvine
1926 Methven, J. Norman, St Martins, by Perth

3.—STIRLING DIVISION

CLACKMANNAN

1925 Hogg, Thomas, Farm Manager, Bankhead Farm, Sauchie, Alloa
1925 Johnstone, Thomas, Park Farm, Clackmannan
1925 Wilson, John Prentice, Farm Manager, Longcarse Farm, Alloa
1926 Wright, Thomas Brown, of Hillfoot, Dollar

DUMBARTON

1926 Anderson, David Blyth, Auchengower, Cove
1925 Andrew, C. W., Frinton, Bearsden
1926 Blair, Andrew J., Geilston Farm, Cardross
1925 Boyd, William Y., Broadholm, Drumchapel
1925 Cameron, Dugald, Langdale, Drumchapel
1925 Duncan, Alexander, Auchinbee, Croy
1925 Gordon, Thomas, C.A., Craigard, Alexandria
1925 Lumsden, Miss S. E. C., Duncryne, Gartocharn
1926 Macdonald, James, Hawthornhill, Dumbarton
1925 M'Donald, William, jun., Windyridge, Bearsden
1925 M'Gown, John, Mansfield, Drumchapel
1925 Mitchell, John, High Duncryne, Gartocharn, Alexandria
1926 Moreland, William, Broadfield, Duntocher
1925 Muirhead, John, Milton Farm, Jamestown
1925 Shaw, John, Barrs Farm, Cardross
1925 Smith, William, Lorn Farm, Balloch
1925 Stewart, Miss Helen T., Craigielea, Milngavie
1925 Stewart, John, Redhouse Smithy, Arden
1925 Thomson, Robert Percy, Kilmardinny, Bearsden

PERTH

(STIRLING SHOW DISTRICT)

1925 Barrie, John, Bravall Farm, Aberfoyle
1925 Barrie, Robert, Bravall Farm, Aberfoyle
1926 CAYZER, Sir A. B. T., Bart., R.N., Gartmore House, Gartmore
1926 Johnston, James, St Helens, Comrie
1926 Johnston, William, Cowden, Comrie
1925 Joynson, Captain Ralph, Drumlean, Aberfoyle (Alt-Skeith, Aberfoyle)
1926 King, Robert Buchanan, of Campsie Arntomy, Port of Menteith
1926 Kinnes, Walter, Dunfillan, Crieff (after May 1926—Inverardran, Crianlarich)
1925 Livingstone, William, Westerton, Doune
1925 M'Gregor, John, jun., Easter Gartfarran Farm, Gartmore
1925 M'Intyre, Gilbert, Daldravaig, Killin
1925 M'Intyre, Malcolm, Wester Thirds Gartmore
1925 Peirson, W., B.Sc., M.R.C.V.S., Walton Lodge, Crieff
1925 Shield, Cecil C., Estate Office, Gartmore
1926 Smith, George F. F., Secretary, Doune Agricultural Association, Union Bank House, Doune
1925 Snadden, Mrs, Coldoch, Blair-Drummond
1925 Stewart, Alastair C., Arrivain, Tyndrum

STIRLING

1925 Barrie, Andrew C., Tamfourhill, Falkirk
1926 Binnie, William, Garth House, Denny
1925 Brown, Thomas, Inverallan Mills, Bridge of Allan
1925 Forrester, James, Longcroft Farm, by Bonnybridge
1926 GARDINER, Sir F. C., Old Ballikinrain, Balfron
1925 Gardner, David, Todhill Farm, Larbert
1926 Graham, James, Dowan Farm, Milngavie
1926 M'Call, James, Blackdub Farm, Bridge of Allan
1925 M'Farlane, George, Ballochleam, Kippen
1926 Macfarlane, John, c/o Mrs Cumming, 57 Port Street, Stirling
1925 M'Howat, Matthew, Muckcroft, Lennoxtown, Stirling
1925 M'Naughton, Joseph, 44 Dumbarton Road, Stirling
1926 Muirhead, Steven S., Greencornhil Cottage, Bannockburn
1926 Muirhead, Thomas, Greencornhill Cottage, Bannockburn
1926 Muirhead, W., Greencornhill Cottage, Bannockburn
1925 Reid, Thomas G., Netherton, Bridge of Allan
1925 Ross, John Allan, Hawthorn Cottage, Bonnyhill Road, Falkirk
1925 Roy, John, Reddoch Farm, Grangemouth
1926 Sleigh, Charles Edward Wilson, 44 King Street, Stirling

4.—EDINBURGH DIVISION

EDINBURGH

1925 Adie, T. D., 187 George Street, Edinburgh
1926 Affleck, Dr R. Cunningham, 7 Rothesay Terrace, Drumsheugh, Edinburgh
1926 Alexander, Henry (Henry Alexander & Co.), Nottingham Place, Edinburgh
1925 Calder, E. Percy, M.B., Ch.B., &c., Stagehall, Stow
1925 CRAIG, Sir H. T. Gibson, Bart., Riccarton, Mid-Lothian
1925 Crawford, Alexander B., Torcraik Farm, Gorebridge
1926 Cross, Noel Paton, 13 Moray Place, Edinburgh
1926 Dron, Thomson (Gavin Bros. & Galloway), 18 Bernard Street, Leith
1926 Galloway, Robert, S.S.C., 8 Rutland Square, Edinburgh
1925 Gladstone, Herbert, Fullarton, Penicuik
1926 Goodall, R. S., 9 Portland Place, Leith
1925 Grieve, J. C., Bank of Scotland, The Mound, Edinburgh
1925 Hutchison, John, 23 Eyre Crescent, Edinburgh
1926 Kerr, Andrew P. B., Gladhouse Mains, Gorebridge
1925 Logan, J., C.D.A., N.D.D., 18 Merchiston Place, Edinburgh
1926 MacDiarmid, Euan, 17 Douglas Crescent, Edinburgh
1925 Macdonald, R. A. S., B.Sc., M.R.C.V.S., J.P., 30 Royal Circus, Edinburgh
1926 Mackay, Donald J. R., 26 Drumsheugh Gardens, Edinburgh
1925 Mackay, Kenneth Charles Murray, 26 Drumsheugh Gardens, Edinburgh
1925 Marshall, Captain J. M'Laren, The Grange, Cramond Bridge
1926 Milroy, A. R., 16 Abbotsford Park, Edinburgh
1926 Robb, William, N.D.A., &c., Craigs House, Corstorphine
1926 Shand, A. B., 11 Brunton Terrace, Edinburgh
1926 Sime, Major William Middleton, O.B.E., "Lynwood," Roslin (after May 1926—Darnhall Mains, Eddleston)
1926 Smith, Alick D. Buchanan, Animal Breeding Research Department, The University, West Mains Road, Edinburgh

EAST LOTHIAN

1926 Cairns, J. Gordon, Nairns Mains, Haddington
1926 Clark, William N., Kirklandhill, Prestonkirk
1926 Cunningham, Alan Usher, West Barns Farm, Dunbar
1926 Fulton, John, Lauder Place, East Linton
1926 Gifford, T. J. Carlyle, Pogbie House, Humbie
1925 Ickringill, Jerry, Congalton, Drem
1926 Jeffrey, Robert, Newmains, Prestonkirk
1925 Kinloch, Robert, N.D.A., N.D.D., Fountainhall, Pencaitland
1926 Muirhead, Archibald S., Drylawhill, East Linton
1926 Patterson, Harry, B.Sc., Muirfield, Gullane
1925 Playfair, Patrick W., Abbey Mains, Haddington
1925 Russell, John, West Mains, Haddington
1925 Young, John, Station House, Dirleton

WEST LOTHIAN

1926 Laird, Robert, Blackridge
1926 Lawson, William, Millbank, Whitburn
1925 Neill, David, Torbanehill, Armadale
1925 Neill, James, jun., Torbanehill Farm, Armadale
1925 Taylor, Charles, Main Street, Blackridge

5.—ABERDEEN DIVISION

ABERDEEN

1925 Anderson, George, Newton of Lewesk, Rayne, Insch
1926 Argo, Joseph, Tillyeve, Udny
1925 Buchan, Miss May S. F., Manar, Inverurie
1925 Burr, James, Schivas House, by Ellon
1926 CATHCART, Lady EMILY E. S. G., Cluny Castle, Aberdeen
1925 Gall, William, 150 Union Street, Aberdeen
1925 Laing, William Watson, Millfarm, New Aberdour
1925 Middleton, William, N.D.A., &c., Rowett Research Institute, Bucksburn
1926 Minto, David, Ardmore, Udny
1925 Mitchell, Peter C., Wester Coull, Tarland

BANFF

1925 Robertson, James, Hilton, Banff
1925 Thomson, Henry J., M.B., Ch.B., Burnside of Tynet, Port Gordon

FORFAR

(EASTERN DISTRICT)

1926 Grant, James B., Mains of Auchmithie, Arbroath
1925 Pattullo, G. B., Pitskelly, Carnoustie
1926 Smith, William Richard, M.R.C.V.S., Brechin
1926 Webster, Gordon, Balzeordie, Brechin

KINCARDINE

1925 Findlay, Mrs Max, Glasslaw, Stonehaven
1925 Hildage, Richard B., Ferneyflatt, Bervie
1926 Smith, James, Easthill, Laurencekirk

6.—DUMFRIES DIVISION

DUMFRIES

1926 Craig, J. Alan, Burn, Thornhill
1925 Dickie, David Thomson, jun. (T. & R. Carlyle), Dumfries
1926 Graham, James A., Rennaldburn, Eskdalemuir, Langholm
1925 Johnstone, Ian Mackenzie, Amisfield, Dumfriesshire
1925 Johnstone, James Lockhart, Amisfield, Dumfriesshire
1925 Risk, James, Kinmount Estate Office, Annan
1926 Roddick, John, Greenbank, Annan
1926 Scott, John, Fairfield, Dumfries
1925 Semple, A. Ronald, Eastpark, Caerlaverock, Dumfries

KIRKCUDBRIGHT

1926 Briggs, John, Brockloch, Dalbeattie
1925 Brown, Mrs J. Douglas, Knockbrex, Kirkcudbright

WIGTOWN

1926 Douglas, Alex., The New Stores, Stranraer
1925 Harcomb, James, West High Ardwell, Ardwell, Stranraer
1925 M'Caig, Allan Watson, Belmont, Stranraer
1925 M'Clumpha, John, Waterside, Bladnoch, Wigtown
1926 M'Intyre, James, jun., Logan Mains, Ardwell, Stranraer
1925 MacMaster, James, Balgreggan Mains, Sandhead, Stranraer
1925 Service, William, Mindork, Kirkcowan
1926 Sproat, A. M'G., North Balfern, Kirkinner
1926 Walker, Archibald Nicol, Bridgehouse, Sorbie

7.—INVERNESS DIVISION

CAITHNESS

1925 Dunnett, J. G., Greenland Mains, Dunnet, Caithness

INVERNESS

1925 Daly, Augustus W., Belladrum, Beauly
1925 Kennedy, John, Soillerie, Insh, Kincraig
1925 Kennedy, William, Soillerie, Insh, Kincraig
1926 Walker, Kenneth Murray, Inverlochy Estate Office, Fort William

MORAY

1925 Gordon, Angus, Findlarig, Dulnain Bridge, Grantown-on-Spey

ORKNEY

1926 Flett, Magnus, Seatter, Kirkwall, Orkney

ROSS AND CROMARTY

1926 Campbell-M'Callum, Mure (Balloch of Culloden), Lemlair, Dingwall
1925 Macrae, John, Contractor, Alness

SUTHERLAND

1926 Cameron, Alastair T., Kirkton, Golspie
1925 Menzies, Duncan, Blarich, Rogart

8.—BORDER DIVISION

BERWICK

1926 Angus, Thomas Curr, Rosybank Cottage, Coldstream
1926 Broomfield, David, Kedzlie, Earlston
1926 Clark, Ian, Legars, Greenlaw
1926 Colville, Captain David, of Chapel-on-Leader, Earlston
1926 Crawford, Peter, Factor, Ladykirk, Coldstream
1926 Dagg, James, Woodheads, Lauder
1926 Forrest, Allan, Boon, Lauder
1925 HADDINGTON, The Earl of, Mellerstain, Gordon
1926 Hislop, James, Stenmuir, Greenlaw
1926 Hislop, John R., Coltcrooks, Gordon
1926 Hogarth, Andrew, High Street, Coldstream
1925 Hogg, Thomas H., High Street, Greenlaw
1925 Lawrie, Thomas, Humehall, Greenlaw
1925 M'Bain, John Duncan (John M'Bain & Son), Chirnside
1926 Ormston, John, West Morriston, Earlston
1926 Pattison, William, Huntshaw, Earlston
1926 Routledge, James Ernest, East Field, Greenlaw
1926 Rutherford, William (J. Rutherford & Sons), Home Place, Coldstream-on Tweed
1926 Somerville, James, Bartlehill, Coldstream
1926 Thomson, James, Woodheads, Greenlaw
1926 Torrie, D. C., of St Leonards, Lauder
1926 Veitch, T. Douglas, Hallyburton, Greenlaw
1925 Walker, Maxwell, Springwells, Greenlaw
1926 Yule, John, Grizelfield, Earlston

PEEBLES

1926 Brown, Robert, Glen Estate Office, Innerleithen
1926 Crosbie, George, Traquair Knowe Farm, Innerleithen
1926 Dalgleish, Harry W., Traquair Mill, Innerleithen
1926 Wilson, Alexander, Newhall Farm, Traquair

ROXBURGH

1926 Allan, George, Croft Gardens, Kelso
1926 Allan, John, Sydenham, Kelso
1926 Amos, James W. P., Flex, Hawick
1926 Anderson, Andrew, Tandlaw, Hawick
1926 Anderson, George, Sweethope, Stichill, Kelso
1926 Armstrong, Thomas, East Oote, Hawick
1926 Bell, James K., Roxburgh Newtown, Roxburgh
1926 Bell, John H., Chesters Grange, Ancrum
1926 Boazman, Adam, Hermitage, Kelso
1925 Bremner, Miss Isabella S., Agricultural College Office, Newtown St Boswells
1926 Brockie, Thomas, Hathornside, Hawick
1926 Brown, Harry, Auctioneer, Hawick
1925 Brown, Walter E., Samieston, Jedburgh
1925 Campbell, The Honourable Jean, Hunthill, Jedburgh
1926 Cessford, George, Priorsland, Heiton, Kelso
1926 Craig, Adam, Harlaw, Kelso
1926 Darling, James Stormonth, Edenbank, Kelso
1926 Darling, Robert Stormonth, Rosebank, Kelso
1926 Davidson, John, jun., Adderstoneshiels, Hawick
1926 Dawson, William, Stonefold, Kelso
1926 Dickson, James, Kennetsideheads, Kelso
1926 Easton, George Scott, Todrig, Hawick
1926 Elliot, Walter, Newhouse, Lilliesleaf
1926 Fenwick, David, Northhouse, Hawick
1926 Forsyth, Moses, New Smailholm, Kelso
1926 Forsyth, Thomas G., New Smailholm, Kelso
1926 Fraser, Hugh, Linton Burnfoot, Kelso
1926 Gardiner, George, Over Wells, Jedburgh
1925 Gladstone, James Sibbald, Kilnknowe, Galashiels
1925 Gladstone, William, Wester Langlee, Galashiels
1926 Graham, James, Kaimflat, Kelso
1926 Greig, Dennis G., Borthaugh, Hawick
1926 Grieve, James, Branxholme Braes, Hawick
1926 Grieve, Robert Elliot, Southfield, Hawick
1926 Hamilton, Adam, Eccles, Bankhead, Kelso
1926 Hardy, Alex. W., Harpertoun, Kelso
1926 Harrison, Walter Scott, Colterscleugh, Hawick
1926 Hislop, Walter, Maidenhall, St Boswells
1926 Hislop, William, Dalcove Mains, Kelso
1926 Hislop, William, Raperlaw, Hawick
1926 Hogarth, Thomas, Sharplaw, Jedburgh
1926 Hogg, J. A., Roselea, Kelso
1926 Holmes, William, Sunlaws Home Farm, Kelso
1926 Inglis, John, Doorpool, Bonchester Bridge, Hawick
1926 Jeffrey, John, Standhill, Hawick
1926 Ker, Andrew, Glenyre, Newtown St Boswells
1926 Kilpatrick, David, Chapelhill, Hawick
1926 Kinghorn, Andrew, Rosebank, St Boswells
1926 Kyle, Archie, Skelfhill, Hawick
1926 Leadbetter, J. G. G., W.S., Kelso
1926 Liddle, Robert, Mellerstain Mill, Kelso
1926 MacGilvray, John, Ash Cottage, Newtown St Boswells
1926 M'Vittie, Alexander, Deanfoot, Hawick
1926 Martin, John, Carlenrig, Teviothead, Hawick
1925 Miller, John D., Skelfhill, Hawick
1926 Mitchell, William, Smailholm, Kelso
1926 Mitchell, W. S., St Helens, Kelso
1926 Moffat, James B., Craick, Hawick
1926 Moorsom, Jermyn, of Hyndlee, Hawick
1926 Morison, Hamish, Mainhouse, Kelso
1926 Mudie, Lieut.-Colonel R. A., Thornwood, Hawick
1926 Murray, John, Whitehaugh, Hawick
1926 Murray, Thomas, Stirches Mains, Hawick
1926 Murray, W. R., Whitmuirhaugh, Kelso
1926 Newton, William, Queenscairn, Kelso
1926 Nichol, Robert, Greenholm, Newcastleton
1926 Nichol, William Scott, Wilton Bank, Hawick
1926 Oliver, Adam, Stodrig, Kelso
1926 Ord, Thomas, Falside, Hawick
1925 Paton, A. C., Whitehill, St Boswells
1925 Paton, Major J. A., Crailing, Jedburgh
1926 Patterson, David, Eskdill Bank, Hawick
1926 Richardson, Thomas, Woodside, Yetholm, Kelso
1926 Robb, G. R., Trows, Roxburgh
1926 Roberton, John F., Yetholm Mains, Kelso
1926 Roberts, J., Whitehill, Nenthorn, Kelso
1926 Rutherford, Simon, Pilmuir, Hawick
1926 Rutherford, William, Brieryhill, Hawick
1926 Sanderson, James B., Muirdean, Kelso
1926 Scarth, A. D., Hownam Mains, Kelso
1926 Scott, Andrew, Newton, Hawick
1926 Scott, Miss Anna C., Spylaw, Kelso
1926 Scott, George, Bonjedward Mill, Jedburgh
1926 Scott, George, Frogden, Kelso
1926 Scott, Thomas R., Crailing Nook, Jedburgh
1926 Scott, Walter, Falnash, Hawick
1926 Scott, Walter, Newton, Hawick
1926 Shiell, George, Ednam Mains, Kelso
1926 Shiell, James, Sourhope, Yetholm, by Kelso
1926 Shiell, Robert, Clifton Hill, Kelso
1926 Shiell, Walter, Whitriggs, Hawick
1926 Short, P. C., Old Graden, Kelso
1926 Smith, John James Elliot, Clifton Cote, Kelso
1926 Smith, John Mitchell, B.Sc., Thornlielaws, St Boswells
1926 Stevenson, Gideon, Commonside, Hawick
1926 Tait, T. Douglas, St Leonards, Hawick
1926 Telfer, John, Broadhaugh, Hawick
1926 Telfer, Thomas G., Mackside, Hawick
1926 Thorburn, James, Hardacres, Kelso
1926 Tullie, John, Highchesters, Hawick
1926 Turnbull, R. H., Sunlawshill, Kelso
1926 Turnbull, Walter, Firth, Hawick
1926 Veitch, Andrew, Seedsman, Melrose
1926 Watson, Robert, Minto Townhead, Hawick
1926 Wood, William, Rachelfield, Kelso

SELKIRK

1926 Anderson, Sir Kenneth S., of The Yair, Selkirk
1926 Brown, Thomas Scott, Philiphaugh Farm, Selkirk
1926 Brunton, George, Harehead, Selkirk
1926 Crawford, James, Middlestead, Selkirk
1925 Crawford, William, Carterhaugh, Selkirk
1926 Davidson, William, East Deloraine, Selkirk
1926 Gray, William, Dryhope, Selkirk
1926 Lees, Andrew, Windydoors, Galashiels
1926 Mitchell, John H., Mount Benger, Selkirk
1926 Murray, James, Riskenhope, Selkirk
1926 Plenderleith, James, Lindean Cottages, Galashiels
1926 Scott, Henry, of Cacrabank, Selkirk
1926 Smith, John, Wardlaw, Selkirk
1926 Smith, Peter, Wardlaw, Selkirk

ENGLAND AND WALES

1926 Birnie, Robert (Condrup, Ltd.), 78 Fore Street, London, E.C.2
1925 Brigg, John H., P.A.S.I., Southburn, Driffield, East Yorks.
1925 Brinton, F. R., 12 Eldon Square, Newcastle-on-Tyne
1925 Cayley, Arthur, J.P., D.L., Carham Hall, Cornhill-on-Tweed
1925 Chalmers, A. Gordon, Estate Office, Styal, Cheshire
1925 Deuchar, James, North Middleton, Wooler
1925 Geddes, Matthew, Baten Bush, Longtown, Cumberland
1926 Gregory, Walter (Walter Gregory & Co., Ltd.), Wellington, Somerset
1925 Hall, E. H., c/o F. Hewthorn & Co., Ltd., 70 Finsbury Pavement, London, E.C. 2
1926 Jobling, R. L., jun., 5 The Grove, Benton, Newcastle-on-Tyne
1926 Marshall, David O., c/o Osmond & Son, Ltd., Grimsby
1925 Marshall, Herbert J., Ordsall Hall, Retford, Nottingham
1926 Mills, Frederick, Manager, Northern Agricultural Supply Association, Roslyn, 37 Swansfield Park Road, Alnwick
1926 Paton, Allistair, Pawston, Mindrum, Northumberland
1925 Pearce, Percy, Shildon, near Bishop-Auckland
1925 Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorks.
1926 Rae, Arnold Halliday (Calthrop Bros., Ltd.), Naylor Street, Liverpool
1925 Ramsay, Norman Bruce, The Grange, Alnmouth, Northumberland
1926 Robertson, George, Shipley, Alnwick
1925 Rodger, D. B., M.R.C.V.S., Ministry of Agriculture, 7 Whitehall Place, London, S.W.1
1926 Shorten, B. G. (James & Fredk. Howard, Ltd.), Britannia Iron Works, Bedford
1925 Smith, R. Parker (Warden Insurance Co., Ltd.), 21 Ironmonger Lane, Cheapside, London, E.C. 2
1926 Stephens, Theo. A., Frensham Manor, Farnham, Surrey
1926 Veitch, William J., Springbank, Berwick-on-Tweed

IRELAND

1925 Bell, R. W., Fruit-Hill, Hillsboro', Co. Down
1925 Glenn, Robert W., Glenvale, Campsie, Co. Londonderry
1925 M'Elroy, William J., Rossdowncy, near Londonderry
1925 M'Veigh, Thomas J., Fairy Knowe, Whitewell Road, Belfast
1925 Short, James, J.P., Wood Park, Anney Beragh, Co. Tyrone
1925 Smyth, William Robert, Ballyalgin, Crossgar, Co. Down

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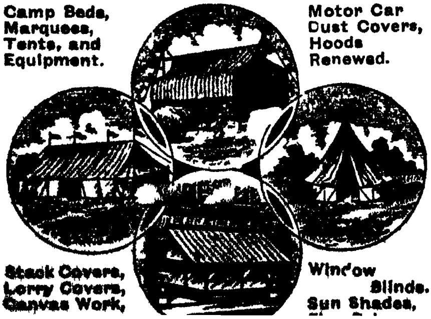

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